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ON THE

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A MEDICAL OFFICER OF THE MINISTRY OF HEALTH.

LECTURE III.—THE INCIDENCE OF CHRONIC ARTHRITIS.*

(Delivered on March 6th.)

CHRONIC arthritis is in truth as old as the hills, for its effects have been recognised by Moodie [1] in the fossil skeletons of giant reptiles of the cretaceous age, whilst long after this the cave bear and the sabre-toothed tiger seem to have been especially subject to it, and it is still seen commonly in many lower animals. Nor in man is it any new disease; it was as prevalent in the prehistoric dwellers of Nubia and Upper Egypt [2] as amongst our Saxon forefathers of the heptarchy of whom Prof. F. G. Parsons [3] has told us, from the exploration of Saxon burial sites at Margate, Mitcham, and Bidford-on-Avon, that they suffered terribly from osteo-arthritis. Coming to more modern times Sydenham describes a chronic form of rheumatism lasting as long as life. Milton [4] regards it as one of the worst of human ills. Of recent years, national insurance has shown its incidence to be of great importance.

The Registrar-General, using the international list of causes of death, classifies *deaths* from chronic rheumatic diseases under the heading 52, which is divided into three sub-headings: (1) chronic rheumatism, (2) rheumatoid and osteo-arthritis, (3) gout.

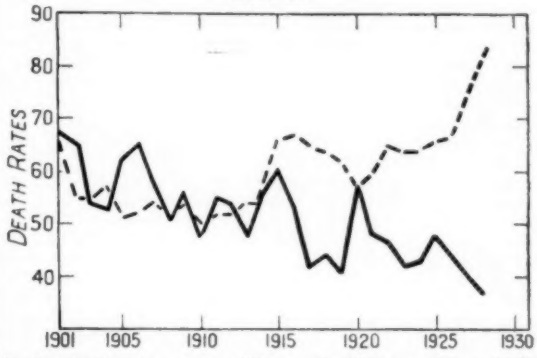
The incidence, as shown by mortality statistics, must be regarded with due consideration to the fact that many of the sufferers are cut off by intercurrent diseases, but this fact is to some extent compensated for by the method used by the Registrar-General in the classification of deaths. By their being placed in Group IV. of the general diseases, a measure of preference is accorded to chronic rheumatism, osteo-arthritis, and gout, and so, under the present method of working, they are preferred to almost any local disease recorded on the same certificate. This practice tends to the completeness of the death returns in respect of chronic arthritis.

Before 1921, deaths from "chronic arthritis" were included under the heading "diseases of the joints" (156), and from 1921 to 1926 inclusive under the heading "chronic rheumatism" (52 : 1). They are now included under "rheumatoid and osteo-arthritis" (52 : 2). These changes have, however, not produced much effect; the diagnosis "chronic arthritis" seems to have been much less often used in death certification than chronic rheumatism or rheumatoid and osteo-arthritis. The total number of deaths recorded under category 52 in 1928 was 3318, of which 2774 (84 per cent.) were ascribed to rheumatoid and osteo-arthritis, 214 (6 per cent.) to chronic rheumatism, and 330 (10 per cent.) to gout.

The rise in the deaths ascribed to rheumatoid arthritis and osteo-arthritis is considerable; thus since 1918 the male deaths have risen from 382 to 735, in 1928 the female from 1129 to 1969—and both sexes from 1511 to 2774, an increase of 84 per cent. The category originated in 1901 as "rheumatic arthritis, rheumatic gout" and 848 deaths previously allotted to "other constitutional diseases" were transferred to it. The deaths ascribed to gout declined to 179 in 1923, since when they have risen to 330 in 1928, which is also an increase of 84 per cent.—an unexpected fact in view of the general impression that gout is a rapidly declining disease.

Probably, however, the increase in deaths due to rheumatoid and osteo-arthritis and to gout, though partly due to the older age-distribution of the population and partly to the preferential selection in the Registrar-General's Office before mentioned, mainly comes from an increased accuracy of diagnosis, due to the increased attention that the chronic joint changes and their classification have received. The crude annual death-rates per million living show corresponding increases—rheumatoid and osteo-arthritis rising from 27 for males, 57 for females, and 44 for persons in 1918 (civil population) to 43 for males, 96 for females, and 70 for persons in 1928. The female death-rate from this group is thus twice as high as the male. More than twice as many deaths are now ascribed to the various forms of chronic rheumatism together than are ascribed to rheumatic fever (apart from heart diseases) and the whole category accounts for about 0·7 per cent. of deaths at all ages, and 1·013 per cent. of deaths taking ages above middle life (45 years) (Fig. 1).

FIG. 1.



Crude death-rates per million. Continuous line = acute rheumatism. Interrupted line = chronic rheumatism, rheumatoid arthritis and osteoarthritis, and gout.

CHRONIC ARTHRITIS IN HOSPITAL PRACTICE.

The small proportion of deaths ascribed to chronic arthritis in the death returns is, however, much larger than the proportion of all *hospital admissions* due to it. In four large London General Hospitals the proportions were as follows: Guy's (1920) 0·5 per cent. of all in-patients, 1·9 per cent. of medical in-patients; St. Thomas's (1925) 0·3 per cent. of all in-patients; St. George's (1926) 0·2 per cent. of all in-patients; Royal Free (1928) 0·2 per cent. of all in-patients, 1·7 per cent. of medical in-patients. Even in special orthopædic hospitals the admissions of chronic arthritis are very small—probably about 3 per cent.—and even in poor-law hospitals, where one would expect a higher percentage, it was found that only 1·8 per cent. of both sexes and 2·3 per cent. of females admitted for chronic arthritis. It is only in the spa hospitals, where some 40 per cent. of the patients are admitted on account of chronic arthritis, that any impression of the heavy incidence of chronic arthritis can be obtained from hospital admissions. As regards out-patients chronic arthritis cases amount to about 0·2 per cent. of all out-patients seen at general hospitals in London, although at the special massage and physiotherapeutic departments they form about 10 per cent. of the cases seen. At the special clinics for physiotherapy, the proportion of chronic arthritis rises to 15 per cent. at the Kensington British Red Cross Clinic, and 26 per cent. at the Edgar Allen Institute, Sheffield.

I have little information as regards foreign hospitals, but I have been informed that at the Mayo Clinic

* Lectures I. and II. appeared in THE LANCET of March 8th and 22nd respectively.

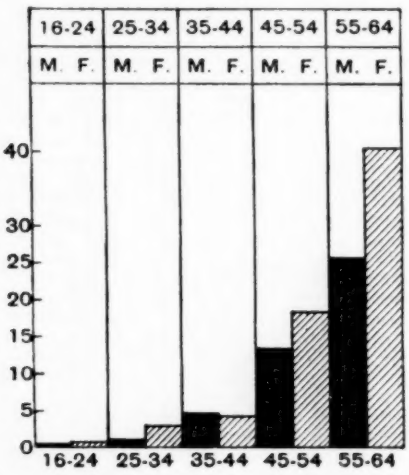
patients with chronic arthritis form some 7 per cent. of the total treated. Kroner [5] states that of a total of 3250 in-patients in the Municipal Hospital, Berlin, which correspond roughly to our poor-law infirmaries, 7 per cent. suffered from chronic arthritis.

A study of chronic disease in Boston was begun on June 1st, 1927, by the Boston Council of Social Agencies.[6] A survey was made of 4316 chronic and incurable patients reported by Boston hospitals or social agencies, 1863 of whom were in hospitals for chronic diseases, 1043 in general hospitals, and 1410 under the care of the Community Association and other social organisations. Males totalled 46·2 per cent.; females 53·8 per cent. Nearly one-quarter were under 30 years of age, one-third between 30 and 60, and slightly more than half were ambulatory. Chronic arthritis cases numbered 467, or 11 per cent.; heart disease 845, or 19 per cent.; cancer 534, or 12 per cent. Kahlmeter,[7] writing of Swedish Government invalidity pensions, says that next to old age infirmities chronic arthritis is the most frequent cause—i.e., in 9·1 per cent.—of all cases of permanent invalidity. Every year 1500 persons, out of a population of 6,000,000, are pensioned for permanent invalidity due to chronic arthritis. In Denmark [8] 14 per cent. of 7297 persons in receipt of permanent invalidity pensions suffered from one or other of the different forms of chronic arthritis, as against 13·5 per cent. with pulmonary tuberculosis. Zimmer [9] has, however, shown that in Berlin a tuberculous patient has 13·4 per cent. the chances of in-patient hospital treatment that a rheumatic patient has.

Insurance Statistics.

Fig. 4 of my second lecture showed the attack-rates for each age group of chronic arthritis as a whole contrasted with those of fibrositis, and of acute rheumatism. Fig. 2 of the present lecture contrasts the attack-rates for each sex of all forms of chronic arthritis combined, whilst Fig. 3 shows the attack-rates for each form of chronic arthritis separately, and has many points of interest. The first—which

Fig. 2.



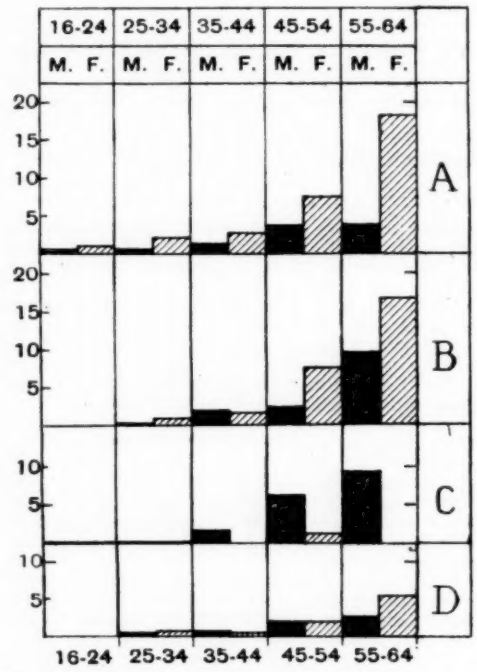
Incidence per thousand insured persons of each sex at each group (England and Wales). Chronic arthritis, all forms.

I mentioned in my last lecture—is the increase in all diseases as age advances; the second, the suddenness of the rise at middle age (45). The third is the greater rates for females in every disease, except gout and in every age-group except in the group 35–44 in osteo-arthritis, and in the same group for all forms of arthritis. The fourth point is the almost complete absence of gout in insured women, gout being fifty times as common in insured men as in insured women.

It may be noted that this chart proves the lasting truth of the aphorism of Hippocrates [10] that "a woman does not take the gout unless her menses be stopped."

As the greater incidence-rates fall upon the older age-periods in which there are fewer workers, the results for all ages are not so bad as the very high rates in the over middle age periods would suggest. Allowing for the age-distribution of the insured

Fig. 3.



Incidence per thousand insured persons of each sex at each age-group. A = rheumatoid arthritis. B = osteoarthritis. C = gout. D = unclassified.

population, we may estimate that in any thousand insured males of all ages there will be found one case of rheumatoid arthritis, three cases of osteo-arthritis, three cases of gout, and one case of unclassifiable arthritis. In any thousand insured females of all ages, on the other hand, we shall expect (owing to the fact that insured females have a much younger age-distribution than insured males) three cases of rheumatoid arthritis and two of osteo-arthritis, gout being absent.

There were probably in the whole insured population in 1922 some 90,000 patients whose chronic arthritis was sufficient to make them seek medical advice for it during the year. In some 40,000 of these cases the disease would be severe, in 25,000 of moderate severity, in 25,000 but slight or early. These estimates, of course, omit the much larger number of cases of chronic arthritis occurring in uninsured females. Probably, too, if the sample were a fair one, the approved societies were paying to their members for that year sick or disablement pay for invalidity caused by chronic arthritis amounting to nearly £1,000,000, in something like these proportions—namely, for rheumatoid arthritis about £381,000, for osteo-arthritis about £389,000, for gout £145,000, and for unclassifiable chronic arthritis about £82,000.

Considerable as these attack-rates for osteo-arthritis may appear we must be prepared to enlarge our ideas about the incidence of osteo-arthritis still further if some modern views of fibrositis are accepted. The work of Putti and Sicard, for example, has largely modified continental opinion with regard to sciatica. Putti [11] is convinced that idiopathic sciatica takes origin in spinal arthritis, "that sciatica is a neuralgia

caused by pathological conditions of the intervertebral foramina and especially of the intervertebral articulations. In other words, sciatica is a symptom of neurodocitis and lumbarthritis. The terms rheumatic sciatica and idiopathic sciatica should be substituted by the more precise and adequate one of arthritic or vertebral sciatica. To treat the sciatica it is necessary to treat the arthritis."

Allard [12] has recently stated that in America in the industrial cases of backache causing absence from work for more than three months, 80 per cent. will be found to be due to hypertrophic arthritis.

Diatheses and Sex-incidence.

"The arthritic diathesis," says Llewellyn,[13] "was certainly one of the first so-called diatheses laid down by our predecessors" and from early times most authorities have inclined to the opinion that *heredity* plays a considerable part in the incidence of chronic arthritis—a part most strongly evidenced in gout; next, perhaps, in rheumatoid arthritis; but still strongly played in osteo-arthritis, which, like old age and all its attributes, tends to run in families. Pemberton [14] found a strong family history in 58 per cent. of his patients, and considers that in certain families, especially those of asthenic or enteroptotic build, in whom one or two members had had arthritis, the occurrence in other members could be predicted almost certainly, especially at or after middle life. Strangeways found this strong family history in almost exactly the same proportion as Pemberton, and in the Ministry's inquiry [15] in female patients with rheumatoid arthritis it was found in 48 per cent.

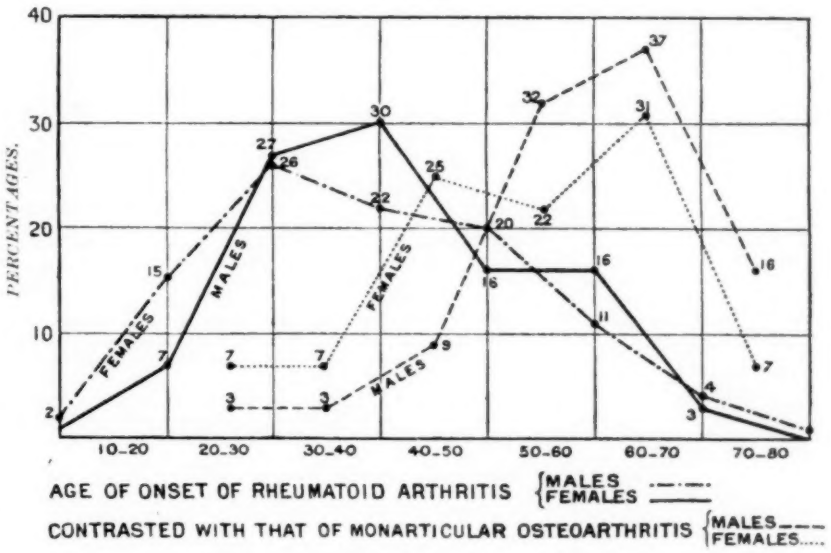
One might have thought Pemberton's families of asthenic or enteroptotic build would have been as likely to develop tuberculosis as rheumatoid arthritis, and it is strange to find, on the one hand, observers who say that persons with this arthritic diathesis are curiously free from any tendency to pulmonary tuberculosis; Lawrason Brown,[16] for example, quoted by Pemberton, found only 11 cases of arthritis in 4500 cases of pulmonary tuberculosis. On the other hand, on the Continent one form of rheumatoid arthritis (Poncet's) is held to be due to a concealed focus of tuberculosis, such as a mediastinal gland.

In few diseases has *sex* a more pronounced influence than in arthritis. Females are much more susceptible to rheumatoid arthritis than males—thrice as susceptible according to Strangeways, five times Llewellyn, and six times Bannatyne; concerning osteo-arthritis opinion is more divided. R. Stockman took the view that it is much more common in men than in women, but other observers speak in less certain terms, and in the Ministry of Health inquiry [17] the attack-rates for osteo-arthritis were found to be considerably higher for insured females than for insured men at every age above 45. Much will depend upon whether the observer classifies certain forms of climacteric arthritis as osteo-arthritis. Monarticular osteo-arthritis [18] of the hip is much more common in men than in women; thus, it formed 8 per cent. of 149 male cases of osteo-arthritis in the Ministry's practitioners' inquiry in 1922, and 9 per cent. of 640 male cases of osteo-arthritis recorded by regional medical officers in the same year, whilst in female cases of osteo-arthritis it formed respectively only 1 per cent. in 71 cases and 2 per cent. in 633 cases.

This sex inequality of incidence of malum coxæ senilis is interesting when we recall that sciatica shows a similar sex inequality, being at least four times as common in men, whilst lumbago is thrice as common in men.

Monarticular osteo-arthritis affecting one knee or one shoulder, on the other hand, form similar percentages of all cases of osteo-arthritis in each sex—about 9 per cent. of all cases of osteo-arthritis being cases in which one knee only is affected, and about 7 per cent. being cases in which the disease is confined entirely to one shoulder, whether the series of cases be males or females. Gout is perhaps of all diseases which can afflict both sexes the most exclusively masculine, and is perhaps 25 times as common in men as in women (my previous proportion relating only to insured women). But in dealing with all forms of chronic arthritis together, and in such problems as provision of treatment, it will be well to estimate that there will be twice as many female patients as male.

Fig. 4.



Shown by the percentages of patients in each age-group.

The diagrams I have shown of attack-rates in various age-groups illustrate the effect of *age* upon incidence. Cases of rheumatoid arthritis may begin at 18 months or at 87 years [19] but its onset is most commonly between 30 or 40 years—that is, a decade or a decade and a half before the usual age of onset of osteo-arthritis or gout [20] as shown in Fig. 4. An earlier onset in rheumatoid arthritis than 30 is usually of serious prognostic import.

Occupation and Chill.

Occupation has undoubtedly much influence upon the incidence of chronic arthritis, although its effects are as yet imperfectly understood. W. A. Lane has emphasised the influence of certain occupations in producing a condition, not so much the result of disease, but rather the result of a series of compensatory changes occurring in one or more joints in response to altered stress. J. van Breemen regards occupation as a determining factor in the production of arthritis, every special trade putting its mark upon what he calls the "rheumatic deviation." The joints most in use in the particular occupation generally show arthritic changes first, most, and longest; in his view

every occupation has its own distinctive "rheumatism." Such occupations as sewing and knitting seem specially conducive to rheumatoid arthritis, but there are obvious fallacies in connexion with such industries. The nursing of sick relatives, Strangeways showed, is an occupation peculiarly apt to lead to rheumatoid arthritis.

Toxic factors must be specially mentioned; painters, for example, from their liability to lead poisoning are specially subject to gout, to osteo-arthritis, and possibly also to rheumatoid arthritis. Eleven per cent. of male patients with gout had a history of occupations involving close contact with lead in the Ministry's inquiry compared with 5 per cent. in the other forms of arthritis and in sciatica, and 2 or 3 per cent. in the other rheumatic diseases. The one outstanding feature in the Ministry's inquiry was the heavy incidence of osteo-arthritis upon metal workers, who, whilst having about their "expected" number of cases of rheumatoid arthritis and of gout, had more than double the "expected" number of osteo-arthritis (and also of sciatica, a disease which is often associated with it).

Chill and exposure are causal factors incident in many occupations, and no doubt account for some of the high arthritis rates in painters and metal workers. Danieschewski, in Moscow,[21] found the heaviest incidence of temporary unfitness due to chronic articular rheumatism to fall on railway locomotive personnel, whose rate was more than twice that of the crude metal workers.

Pemberton [22] found a history of exposure in 42·8 per cent. of 70 male cases of chronic arthritis, whilst Strangeways,[19] in 200 cases of rheumatoid arthritis, found a history of chill or exposure in 24 per cent. Pemberton says that "definite clearly-remembered exposure played a surprisingly large rôle in the conscious experience of the men in civil life. In this respect it is in full consonance with the rôle of exposure among soldiers, differing markedly from the small significance given to this ætiological factor among women." We have no accurate information as to the effect upon the incidence of chronic arthritis of *dampness* of house or of site, but dampness of houses is a condition which stands condemned by professional and general opinion alike, in relation to chronic arthritis, and there is little doubt as to the correctness of this view, emphasised as it is by the great clinical authority of Charcot and of Garrod.

Hard Water.

The effect of the *water-supply* upon the incidence of arthritis is a question often asked by correspondents writing to the Ministry, for there is a tendency to consider that hardness in a water-supply might increase the incidence of chronic arthritis, or that it might exacerbate the symptoms in a patient already suffering from the disease. As regards the first, there is no evidence, whilst the prevalence of osteo-arthritis in the great towns of South Lancashire which have soft water-supplies is well known. With regard to gout in the Ministry's inquiry [23] there was no apparent correlation between the hardness of the water-supply and the incidence, Birmingham, for example, with a soft water having a gout incidence much greater than that of Norwich with a hard water. Sir Alexander Houston [24] says "of not unreasonably hard waters, the evidence in favour of their harmful properties is largely, if not wholly, fanciful .... the consensus of medical opinion favours the moderate view that, within reasonable limits, the hardness of a water is a matter of small importance." P. G. Lewis,[25] speaking of waters of temporary hardness in relation to health generally, stated that there is no evidence that hard water has any bad effect; on the contrary, all the evidence is the other way. French and Austrian commissions have arrived at similar conclusions. The drinking water of many of our health resorts is hard.

The matter may be summarised thus, that there is no apparent correlation between the hardness of water and the incidence or severity of chronic arthritis, although patients sometimes complain that their arthritic pains are made worse by drinking hard water.

The *geographical incidence* in the Ministry's inquiry seemed to point to osteo-arthritis, together with its frequent associate lumbago and sciatica, being unusually prevalent in the industrial practices of South Lancashire. Osteo-arthritis has been nicknamed the Manchester disease. Gout was strikingly in excess in the south of England, and remarkably scarce in the north-east division, but its local incidence varied greatly, the male attack-rate in Birmingham being nearly seven times that in Sheffield. I have long desired to investigate the local incidence of gout. With regard to foreign countries French physicians seem convinced that there is less chronic arthritis there than in England, though relatively to other forms the Poncet type of arthritis is perhaps more common. Chronic arthritis seems to be as common in the north-eastern States of America, in Germany, in Holland, and in the Scandinavian countries as in England. Danieschewski's [21] work suggests that it is more common in Russia. But the absence of a working classification for international use has so far prevented any valid comparisons.

Reduction of Chronic Rheumatism.

In my second lecture I showed the immense incidence of the non-articular manifestations of chronic rheumatism, whilst in this last I have shown that chronic arthritis, inconspicuous in mortality and hospital statistics, is, nevertheless, one of the greatest factors in the production of suffering and invalidity, and that together the rheumatic diseases cost fully one-seventh of the total financial burden of industrial sickness.

Can anything be done to reduce this great incidence of chronic rheumatic disease? Here are great numbers of persons suffering from fibrositis and chronic arthritis, both of which are pathological conditions produced, like, say, food poisoning or bronchitis, by a variety of agents or causes. Of these factors, diathesis, faulty metabolism, trauma, occupational stress, mental stress, senile change, and derangement of endocrine balance seem all to be important, but focal sepsis appears to be the chief, and there is evidence in more than half of all cases that it has played a leading part.

Sepsis and Dental Prophylaxis.

The more important sites of focal infection associated with fibrositis and chronic arthritis are those connected with the teeth, the tonsils, the accessory sinuses, the genito-urinary system, and the bowel, the two first mentioned being by far the most common. The organism most frequently incriminated is the non-hæmolytic *Streptococcus viridans*.

The identification of the infecting focus is often difficult, but there can be little doubt that the prevention of dental sepsis should be one of our first objectives if we are to reduce the incidence of the chronic rheumatic diseases. The school medical service is improving the condition of our children's teeth and the approved societies are spending great sums on dental benefit, but although all this and more is necessary, yet for success it seems we must go farther back, and follow that more excellent way indicated in the researches of Prof. and Mrs. Mellanby.[26] If their work applies, as seems likely, to the child as much as to the puppy, it follows that not only must the growing child have a sufficient diet containing vitamin D, but that proper maternal feeding with a diet containing the same vitamin is essential while the child is yet unborn if he is to produce not only perfect deciduous but also perfect permanent teeth. Unfortunately the staple diet of the working classes consists largely of articles deficient in vitamin D, and some otherwise admirable foods, such as oatmeal, seem to have a deleterious effect on the calcification of teeth.

We must revise all our ideas, for it seems clear that the most rigid adherence to the accepted rules of dental hygiene constitutes little safeguard against caries, though those of us who have had the misfortune to be born and to have acquired our defective

teeth before these investigations, probably would do well to continue it. For the next stage in the investigation we must look to our colleagues in charge of antenatal clinics, but education, oral hygiene, detergent dietary, regular inspection and treatment of the teeth are still urgently necessary.

It is too soon to know whether the wholesale tonsillectomy seen of recent years, especially in the wealthier classes (50 per cent. in most of our great public schools), will produce greater freedom from chronic rheumatism.

Environmental and Personal Hygiene.

The importance of the prevention of dampness in the sites of dwellings, and in the dwellings themselves, and the importance of the free circulation of air and of sunlight about dwellings is great in the prevention of arthritis. Dampness in a dwelling is an unmixed evil to the health of the inmates. The provision of pithead and works baths, and the proper first-aid treatment of minor sepsis, are perhaps only slightly less important in the prevention of arthritis than in the prevention of fibrositis. The improved protection given to many water-supplies against plumbosolvency may be a factor in the reduction of the incidence of gout, whilst the increasing sobriety of all classes and the scantier and more vegetarian diet of middle aged persons in sedentary occupations are features of modern life which should tend to diminish both gout and some other forms of chronic arthritis. The increased attention given to maintaining the muscular tone and the skin reaction of the individual in bathing, sun bathing, games, sports, exercises—particularly those in the open air—are of the utmost importance in increasing the resistance to the disease, and in counteracting the evil effects either of sedentary occupation, or the special stress of occupational trauma. Then, too, are important the prophylactic effects of correct posture, and the prevention of postural and static deformities, scoliosis, and flat-feet. In Boston, Goldthwait and Osgood, in addition to other measures, employ general corrective exercises with great advantage in the treatment of chronic arthritis. Dr. A. R. Neligan tells me "it was striking to see badly crippled arthritics with abdominal and chest movements and muscles properly developed and diaphragms taking their full share in the activation of the circulation, as the result of this training, fighting their way back to health." We must keep supple, "Not tied or manacled with joint or limb," says Milton "and obstacle find none, of membrane, joint, or limb." Crepitation or grating in a joint matters little so long as it works freely and painlessly. Function is the important thing. The disordered function is the disease.

TREATMENT.

Even with so chronic a disease as arthritis the first essential of success in treatment is an early diagnosis, based on a complete investigation of the possible causes—what is the type of the arthritis and is there an infective focus?

The determination of the type of arthritis may profoundly affect the treatment, but cannot in any case lessen the need for the most careful search for an infecting focus. For example, suppose the diagnosis is gout—the most undoubtedly metabolic disease of the group—the second duty, the search for the infecting focus, is as clamant as ever, for, in a large proportion of cases of gout, an infective focus plays an important rôle in activating the metabolic process, and so precipitating attacks.

If an infective focus be found it should be removed or treated at the first possible opportunity. However much importance we may attach to metabolic, endocrine, or other factors in the causation of chronic arthritis, if we attempt to treat the disease in the joints in the presence of an unreduced focus of infection our attack will almost assuredly fail. Time in the treatment of chronic arthritis is almost everything. Cecil and Adams,[22] in 612 cases, found that 82 per cent. of patients treated in the first six months of the disease either recovered completely or were greatly improved. The percentage of favourable results decreased with each year, so that patients whose symptoms had persisted for five years or more before coming to the clinic rarely received very marked benefit from any form of treatment.

The complete investigation of the possible causes of arthritis may be a long and difficult matter, requiring a regular "team" of specialists. Once discovered, the removal of a focus may be equally a matter for the utmost care. For all this elaborate diagnostic investigation, and for the treatment and removal of the foci found, to be undertaken under the most favourable conditions, an "arthritis unit" seems to be almost indispensable.

This should be an in-patient institution or a department of an existing in-patient hospital working in close coöperation with either a university or a large teaching school of medicine to enable it to fulfil the purpose of research teaching and observation as well as of treatment. Here patients would come at the earliest stage of their disease for thorough examination by modern methods, for diagnosis, and for record; here the focus of infection would be sought, and, if possible, found and removed; here the necessary bacteriological, biochemical, and radiographical work could be completed before the patient was passed on to the spa hospital, or to the physical treatment centre, or to his own doctor for domiciliary treatment, or to complete his cure; here orthopædic surgery, or the fitting of the more elaborate appliances occasionally necessary in advanced cases, would be performed.

Neither the general hospitals, overburdened as they are with acute cases, nor the general practitioners have the time or the equipment to deal with these long cases of chronic arthritis. This is no reflection upon the practitioner. No man can in himself constitute a "team," he cannot be dentist, bacteriologist, radiologist, throat surgeon, and hydrologist in one person. At present only a small minority of the patients are subjected to that thorough diagnostic search which should precede any treatment for chronic arthritis, and only an equally small fraction, usually of the wealthier classes, are able to secure in full measure those forms of treatment, especially the physical therapy, they need.

Centres for Physical Treatment.

No scheme of treatment for chronic arthritis can be considered complete unless it provides for a large range of physical methods, including electrical treatment, diathermy, radiant heat, ionisation, massage, exercises, and the various forms of hydrological treatment. This last, if not essential, is an invaluable adjunct for the resorption of inflammatory products, for the relief of pain, for rendering stiffened tissues supple, for the restoration of lost function in the joints and lost reaction in the skin, and for the re-education of wasted muscle. Whilst hydrological treatment is perhaps best given as spa treatment with the advantages of change of air and regimen, and the specific therapeutic qualities of the natural mineral waters of the spa, it can be given with great benefit to patients at out-patient clinics. Physical and hydrological treatment involve special experience, specially trained staff, and special equipment, and these can only be secured economically if the treatment, as far as out-patients are concerned, be given in physical treatment centres equipped to deal with large numbers of patients.

Such physical treatment centres should also be arranged to act as clearing houses, directing patients as to the form of treatment particularly suited to their special need and the place where it may be obtained. Some cases need the removal of a focus of infection, some the intensive study of an arthritis unit, others are suitable for treatment at a spa or spa hospital, whilst others would be greatly benefited by regular out-patient treatment at the centre. These centres should be organised in closest liaison with the "arthritis unit" and with the spa hospitals, and should provide the continued supervision, observation, and necessary after-care, including education in simple remedial movements, which should follow in-patient institu-

tional treatment. Such centres would be of the greatest service in many conditions other than arthritis, fractures and injuries, deformities, fibrositis, and diseases of the nervous system.

Last week was a memorable one in the history of the treatment of chronic arthritis, for it saw the opening by the Queen of the new Regent's Park Physical Treatment Centre for Rheumatic Diseases provided by the activity of the British Red Cross Society and the munificence of Sir Otto Beit and others. Without disparagement of several smaller existing clinics which are doing wholly admirable work in Kensington, Sheffield, and elsewhere, I may describe this new centre, capable of dealing with 400 patients a day, as the prototype of the new order. Unfortunately, no "arthritis unit" has yet come into being, and so far this institution remains a vision of the future.

Spa Treatment.

The *spa hospitals* of this country treat over 2500 cases of chronic arthritis each year, which form some 40 per cent. of all their cases admitted. They do an invaluable work now, but would do even better by proper coördination with arthritis units and physical treatment centres, for at present many of their 650 beds are occupied by patients whose disease is too advanced to permit of full benefit, and despite rules to the contrary, many patients come for spa treatment with unremoved focal sepsis. A wise selection of cases would be invaluable to the efficiency of the spa hospital. The patients having been thoroughly examined, and the preliminary treatment being completed at the arthritis unit, spa treatment would be more efficient and the chances of the spa physician to cure rather than to alleviate the condition of his arthritis patients greatly increased. Liaison with physical treatment centres would also enable a proper follow-up system to be introduced so that patients after leaving the spa hospital could be kept under periodic observation, and receive out-patient treatment when necessary.

In view of the heavy incidence of the chronic rheumatic diseases and their immense cost, the provision and support of all three types of institutions could scarcely fail to repay any reasonable expenditure upon them.

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CEREBRO-SPINAL METASTASES FROM UNSUSPECTED PULMONARY CARCINOMA.

BY FERGUS R. FERGUSON, M.D. MANCH., M.R.C.P. LOND.,

ASSISTANT PHYSICIAN, MANCHESTER ROYAL INFIRMARY; LATE REGISTRAR, NATIONAL HOSPITAL FOR NERVOUS DISEASES;

AND

W. ESMOND REES, M.D., M.R.C.P. LOND.,

RESIDENT MEDICAL OFFICER, NATIONAL HOSPITAL FOR NERVOUS DISEASES, QUEEN-SQUARE, LONDON.

UNTIL comparatively recently, primary carcinoma of the lung has been regarded as a somewhat rare disease. In 1903 Rolleston and Trevor [1] found only eight cases of intrathoracic malignant disease in 3983 autopsies extending over a period of 12 years. Investigations in this country, in America, and on the Continent during the past 10 to 15 years have revealed the fact that this disease is now much more frequent. During the period 1889–99 at the Eppendorfer Krankenhaus, Hamburg, Kikuth [2] states that there were only 10 primary cancers of the lung, whereas from 1912–23 there were 146 cases (the annual number of necropsies was doubled in the period 1889–1923). Primary carcinoma of the lung now probably constitutes about 4 per cent. of all carcinomata.

The problem naturally arises as to whether this increase is real or only apparent. Simpson [3] has paid special attention to this point and concludes, after eliminating alterations in pathological conception and improvements in clinical diagnosis, that the increase in incidence is a real one. Many suggestions are forthcoming to account for this increase, but none of them is entirely satisfactory or free from criticism. It might be due to improvement in diagnosis, associated with recent advances in radiography and bronchoscopy, and to the attention which has been focused on the subject by the careful work of Barnard on the pathological nature of intrathoracic neoplasms. Fried [4] has also suggested that influenza, recently present on several occasions in almost pandemic form, has been the direct cause of a metaplasia of the pulmonary epithelium leading to the development of a neoplasm. Other views are that the increase is due to the inhalation of some foreign material from the atmosphere (Duguid [5]), to "tar-spraying" of the roads or to the pollution of the air by exhaust gases from motor-driven vehicles.

Along with the increase in the primary lesion, one would expect an increase in the occurrence of secondary deposits, and the present investigation arose from the admission to the National Hospital for Nervous Diseases, Queen-square, during the past three years of eight verified cases of primary carcinoma of the lung associated with metastases giving rise to signs or symptoms of central nervous system involvement. The vigorous metastasising power of lung carcinomata has been noted frequently and has been attributed to the vascularity of the organ, to the frequent invasion of the blood-vessels by tumour, and to the abundant lymphatic channels. The frequency with which cerebral abscess follows bronchiectasis or pulmonary abscess is well known to every student, but the close association of pulmonary with cerebral carcinoma has received less attention in this country. The central nervous and osseous systems are much more frequently the site of secondary deposits from primary lung carcinomata than is generally recognised. A study of the post-mortem records of the National Hospital, Queen-square, shows that during the past ten years, out of a total of 29 tumours of which the secondary deposits produced signs or symptoms of central nervous system involvement, nine were of pulmonary origin.

This number was rivalled only by the cases of primary carcinoma of the breast, and in these the secondaries were chiefly in bone. In a recent article Weller[6] says: "The most noticeable omission from our series of cases is that of one illustrative of those who enter neuropsychiatric clinics because of changes dependent upon metastases to the brain or meninges." Dosquet[7] found central nervous system involvement in 37 per cent. of 105 cases of carcinoma of the lung; Fried[8] found 9 cases out of 19 lung carcinomata with cerebro-spinal symptoms. Although common, this association is not generally recognised, and the fact that, with one possible exception, it was not diagnosed in any of the present cases nor in many of the recorded cases is our excuse for emphasising it. The possibility of successful radical surgical treatment of the primary lung lesion and the advances in radium therapy increase the need for closer investigation and observation of these cases. The explanation of the difficulties probably lies in the fact that clinically the cases may present themselves in very diverse fashions.

First, there are the patients who show signs and symptoms of a chest lesion alone and in whom there is no ante-mortem evidence of cerebral metastases.

Secondly, cerebral symptoms may arise in the course of treatment for a pulmonary lesion. These cases are often found in a general or chest hospital; the neurological signs and symptoms are rather vague and indefinite and are probably attributed to toxæmia or cachexia.

Thirdly, there are the cases with which we are dealing where the chest signs are but few and receive scant attention, whereas the neurological signs and symptoms are prominent.

Fourthly, there are the few cases which die in coma without having previously presented any definite signs of pulmonary or nervous disease.

Since the clinical manifestations are so varied the problem obviously abounds with difficulties, especially as some of the most elusive medical problems are those which lie between two special departments—for example, pulmonary and neurological.

In the majority of the cerebral cases the symptoms are due to intracerebral deposits and in only a few to secondary pressure signs from cranial (bone) metastases. On the other hand, in the spinal group only seven or eight cases of true intramedullary secondary deposits have been recorded, and in the majority the symptoms result from pressure—either sudden or gradual in onset—from metastases in the vertebral column. Winkelman and Eckel[9] have noted a sharp clinical demarcation between the cerebral and spinal cases; Case 5 in our series is interesting in showing how cerebral signs and symptoms may arise from the extension of a vertebral lesion upwards to the base of the skull, so that a neurological picture like that of disseminated sclerosis or cerebro-spinal syphilis is presented.

Case Reports.

CASE 1, male, aged 37, was admitted in April, 1927, complaining of fits, headache, vomiting, and right-sided weakness of ten weeks' duration. In February, 1927, he noted, while driving a car, that his right leg was jerking. Many attacks of right-sided convulsions followed, usually heralded by twitching in the right buttock. He was well nourished and intelligent with hesitant speech. His right arm and leg were weak, hypotonic, ataxic, and defective in the sense of position and passive movement; the tendon-jerks in the right upper limb were exaggerated and the abdominal reflexes absent. The lungs were normal.

In May, 1927, a left parietal bone-flap was reflected, but no tumour was identified. Papilloedema, aphasia, and a right hemiplegia accompanied by marked emaciation preceded death in August, 1927.

Autopsy.—A large soft hernia, containing a tumour, was seen in the left parietal area and five tumours were found in the frontal, temporal, and occipital regions. The cerebellar hemispheres contained four tumours. All the tumours were rounded and clearly demarcated, frequently by a zone of hæmorrhage, from brain tissue. The superficial growths resembled small strawberries in colour and granularity (Fig. 1). A firm, whitish growth with many enlarged glands was found spreading outwards from the root of the left lung; the left upper lobe showed a purulent broncho-pneumonia.

The spleen contained two large, white, rounded tumours; the other organs were normal. Microscopically, all the tumours presented very similar characteristics, although relative differences were present in the various organs. They consisted of trabeculæ of large columnar cells, with their long axes parallel, and in the centre oval or rounded cells with comparatively little cytoplasm. The amount of fibrous tissue varied considerably; it was very pronounced in the centre of the hilar mass but only slight in amount in the brain, where the picture presented was that of trabeculæ

FIG. 1.

Horizontal sections of cerebral hemispheres (Case 1) showing secondary deposits, well demarcated, surrounded by a zone of haemorrhage, and, below, of "strawberry type."

of carcinoma cells with a central core of blood-vessels, the latter being immediately surrounded by a narrow zone of connective tissue (see Figs. 2 and 3).

CASE 2, male, aged 57, was first seen in November, 1927, complaining of loss of memory and drowsiness. Ten months previously he had had influenza (headache, drowsiness, and inversion of sleep rhythm); five months later he had pneumonia and pleurisy. The X ray taken at that time showed diffuse opacity at the base of the right lung, suggesting pleural effusion and thickening. He had been discharged from hospital in June, apparently well; shortly afterwards he had become very depressed, with poor memory and concentration. Later he had complained of weakness of the right arm and leg; this had improved but had recurred, together with incontinence of urine and fæces. He was pale but fairly well nourished, with a Parkinsonian facies but no speech defect; his cerebration was slow and his coöperation poor. His visual acuity, fields, and fundi were normal. All conjugate movements of the eyes, other than downward movement, were defective. He showed reversed Argyll Robertson pupils, and his tongue was tremulous and protruded with difficulty. The upper and lower limbs showed a generalised weakness and wasting, more marked on the right side. Apart from absence of the abdominal reflexes and a right extensor plantar response the reflexes were normal. Routine examination of the lungs revealed no abnormality. A presumptive diagnosis of post-encephalitic Parkinsonism was made, but a fortnight after admission he suddenly became comatose and died within 24 hours.

Pathological Examination.—The convolutions of the brain were markedly flattened; seven deposits were present in the pons and cerebellar hemispheres. The right lung

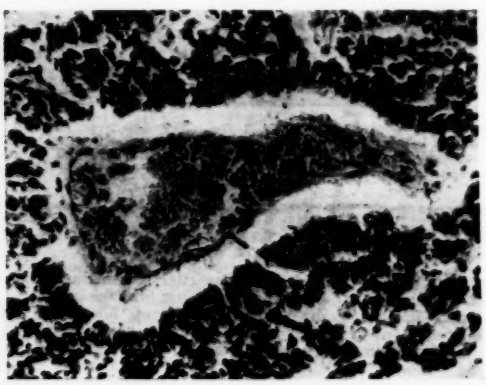
contained a mass of growth, extending from the hilum into the lung tissue; œdema and patchy consolidation were present in the right lung. The left lung was healthy. The tracheobronchial glands were enlarged and infiltrated with tumour. A carcinomatous nodule was seen between the right kidney and suprarenal. Microscopically, the tumours were composed of trabeculæ of cells with a varying amount of connective tissue stroma, in which many large thin-walled blood channels were seen. The cells were ovoid or elongated in type, the outer ones in the trabeculæ being arranged radially with a flattened end in contact with, or shrunken away from, the fibrous tissue. The stroma was much more marked in the lung and suprarenal tumours than in the brain; plasma cells were seen in fair numbers in the fibrous septa and mitotic figures were numerous.

CASE 3, male, aged 34, complained on Feb. 8th, 1928, of unsteadiness of the legs and of pain on the right side of 14 days' duration. He was well nourished, intelligent, and bradykinetic, with a left-sided facial weakness; the right pupil was larger than the left. There was weakness of the left arm and leg; the arm-jerks were sluggish and the right knee-jerk brisker than the left. The gait was unsteady with a tendency to fall forwards and to the left. The liver was enlarged and the abdomen doughy. On Feb. 23rd he was unable to sit up in bed and complained of pain in the right chest and difficulty in speaking; examination revealed nystagmus and a right extensor plantar response. He became rapidly worse and died on March 30th.

Pathological Report.—Two masses of tumour projected from the inner and outer tables of the skull in the right fronto-parietal region; the subjacent meninges were thickened and opalescent but there was no evidence of any deposit in the brain substance or spinal cord. A large mass was found in the lower lobe of the right lung, and enlarged glands infiltrated with growth in the right hilum and mediastinum. There were secondary deposits in the left pleura, liver, lesser omentum, and the abdominal and cervical lymph glands. Microscopically the tumours were of the oat- and polygonal-cell type of bronchial carcinoma.

CASE 4, male, aged 56, was admitted to hospital in May, 1921, because of forgetfulness and strangeness of manner of two months' duration. Apart from pains in the knees there were no other complaints. He was thin and his

FIG. 2.

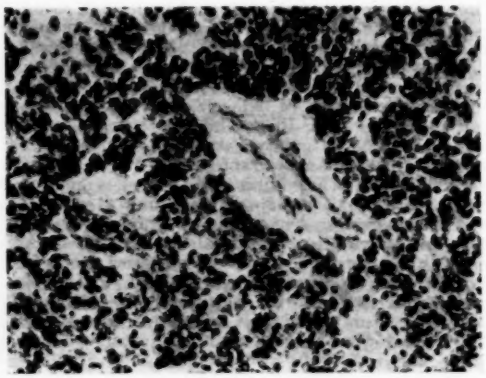


Section of pulmonary tumour (Case 1) showing typical cell arrangement round a blood-vessel.

orientation was poor. The left pupil was larger than the right and there was fine nystagmus on extreme lateral deviation and bilateral tremor of the outstretched arms. The abdominal reflexes were diminished on the left side, and there was a left extensor plantar response and an exaggerated left knee-jerk. Apart from slight cough nothing was found to indicate a lesion of the respiratory system. While in hospital he had two attacks of unconsciousness, followed by general deterioration, further impairment of mentality, drowsiness, irregular pyrexia, double incontinence, and bilateral extensor plantar responses. He died in September, 1921. The cerebro-spinal fluid showed 22 cells per c.mm., 0·08 per cent. of albumin, and excess of globulin, but was otherwise normal.

Pathological Examination.—There was extreme emaciation; two tumours were present on the surface of the brain, one in the right frontal region and the other in the left cerebellar hemisphere. A large tumour mass was found at the base of the right lung; the overlying pleura was densely adherent and infiltrated with growth. A tough-walled cavity containing greenish fluid pus was present in the tumour mass. There were a few enlarged glands in the right hilum but otherwise no involvement of glands in the mediastinum or left hilum. Broncho-pneumonic changes had occurred at the base of the left lung. Microscopically, the pulmonary neoplasm was composed of small round cells with large deeply staining nuclei; numerous plasma

FIG. 3.



Section of brain tumour from the same case. The cells are more irregularly arranged.

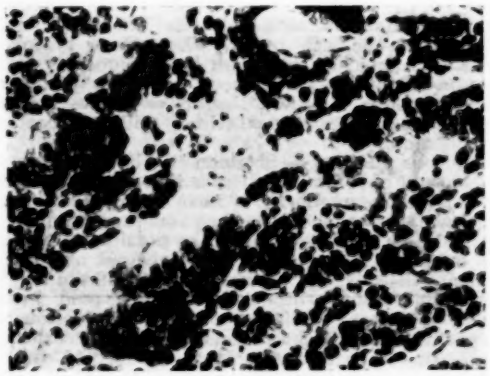
and endotheloid cells were seen. There was no trabecular or alveolar arrangement of the cells as in Cases 1 and 2, and but little fibrous tissue. The cells in the brain tumour were similar in type but slightly larger in size.

CASE 5, male, aged 21, five months before admission to hospital in December, 1927, had sustained a slight injury to his back and had been in bed for three days. A fortnight later he had had a further slight injury and had been in bed for seven days. He had also complained of dyspnœa. Three months later he had had diplopia; one month later he had complained of weakness and numbness of both legs. He was poorly nourished and slightly cyanosed but psychically normal. There was complete paralysis of the right sixth nerve, nystagmus to the left, ataxia in the upper limbs, and complete paralysis of lower limbs. The reflexes were brisk and the tone in the thighs increased, but the calf muscles were toneless. The abdominal reflexes and ankle-jerks were absent but the knee-jerks were normal. The right plantar response was extensor. There was complete loss of all forms of sensation below the eighth dorsal segment on the right and the tenth dorsal segment on the left side. Examination of the chest revealed an impaired percussion note at the left base in addition to generalised rhonchi and bilateral harshness. The fingers were clubbed. Two weeks after admission, signs of consolidation were found at the right apex. Radiography revealed a right apical opacity, thought to be possibly carcinomatous but more probably tuberculous. In December, 1927, there was no demonstrable weakness of the right sixth nerve, although the patient still complained of transient diplopia. The right supraclavicular glands were palpable. Extensive bedsores developed, accompanied by cystitis and diarrhœa; marked emaciation preceded death in February, 1928.

Pathological Report.—The body was very emaciated; the brain, spinal cord, and pia-arachnoid appeared normal. Extradurally, extending throughout the length of the cord and eroding the vertebral bones slightly, were numerous soft masses of growth, most prominent at the mid-dorsal level but continuing upwards into the cervical region and skull, where a fairly large mass lay between the dura mater and a very much thinned occipital bone just to the right of and behind the foramen magnum. Numerous other soft sessile tumours—apparently causing no compression of the brain—lay between the dura and the cranial vault. The appearance suggested by these flattened tumours lying in their eroded depressions in the bone was reminiscent of oysters in their shells. The pituitary gland was cushioned up by a tumour mass lying between the gland and the basi-sphenoid; no other tumours were seen over the base of the brain. Similar sessile tumours were found substernally, prevertebrally, and on the left ninth and tenth ribs. A large solid mass was found near the hilus, continuous with

the prevertebral masses; the upper lobe was completely collapsed, and there were secondary deposits in the liver, right cervical, and abdominal lymph glands. Microscopically the tumours all presented similar appearances; the cells were arranged chiefly in columns and those which abutted on the intervening fibrous tissue were of columnar type. This trabecular arrangement was not universal, the appearance presented in some areas being that of a homogeneous mass of spheroidal or oval-shaped cells. There

FIG. 4.



Section of pulmonary tumour (Case 5). Cells are arranged in trabeculæ and at one point are seen surrounding a blood-vessel.

was a considerable amount of fibrous tissue but few blood-vessels (see Fig. 4).

CASE 6, male, aged 43, was admitted in November, 1927. Eleven weeks previously, during a severe asthmatic attack, he had complained of weakness of both legs; this had been followed three weeks later by lumbo-sacral pain, which had radiated forwards on the right side, and by some paroxysmal cough with scanty expectoration. When three years old he had suffered from pulmonary congestion, and from youth upwards he had been subject to asthma. He was cyanosed and dyspnœic, and showed bilateral weakness and wasting of the lower limbs. The right knee and left ankle-jerks were absent and the left knee and right ankle-jerk were exaggerated. The abdominal reflexes were absent, and the plantar response flexor on the right and extensor on the left. There was well-marked kyphosis. Apart from harsh breath sounds with prolonged expiration, nothing abnormal was detected in the respiratory system, and no tubercle bacilli were found in the sputum. The X ray suggested tuberculous affection of the lungs, but no bony disease was seen. The patient was bedridden whilst in hospital. His dyspnœa increased, his general condition deteriorated, and he died in November, 1927.

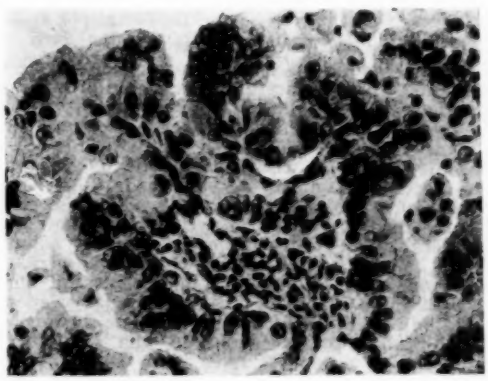
Pathological Report.—The body was emaciated, and the brain normal. On removing the spinal cord a purulent exudate appeared at the level of the tenth dorsal vertebra on the left side and at the level of the second lumbar vertebra on the right side; the bone in these regions was softened and rarefied. The left side of the sacrum was infiltrated with growth and on section exuded a creamy fluid; the dura mater and spinal cord were apparently unaffected. In the right lung a mass of growth was seen spreading from the hilum into the base, and in the middle lobe there was an area of collapse. There were secondary deposits in the liver. Microscopically the pus consisted of large mononuclear and bone-marrow cells; the tumours were composed of fairly solid trabeculæ of cells with elongated dark-staining nuclei. In some situations, especially in the liver, there was a tendency for the outermost cells of the trabeculæ to be arranged in palisade formation, but for the most part they were clustered irregularly together, in some cases around a central vessel. The cells varied in type; the nuclei were elongated and stained deeply, the cytoplasm showing basophil staining.

CASE 7, male, aged 44, was first seen in January, 1929, in a stuporose condition. Seven years previously he had had pleurisy; six months previously he had complained of severe occipital headache followed by giddiness, vomiting, and failing vision. His judgment, perception, and memory were impaired; walking became difficult, and he was unable to read or write. He was emaciated and very drowsy, and showed incontinence of urine and fæces, bilateral papilloedema, weakness of the right seventh nerve and right arm, and coarse tremor of the outstretched arms; the "grasp reflex" was elicited in the right hand. The deep reflexes were exaggerated, and the right abdominal reflexes absent; the right plantar response was extensor. Tests for aphasia revealed errors in recognition of common objects, in reading, and in writing. In January, 1929, a left temporal decompression was performed but no tumour was identified.

Pathological Report.—The body was markedly emaciated. A large tumour was seen on the upper surface of the left cerebellar hemisphere; it was not adherent to the falx and was embedded in the cortex. The left lung was adherent behind the hilum to the vertebral bodies, and its lower lobe was partially consolidated; throughout this lobe small areas of agglomerations of miliary whitish points were scattered. Similar areas were found in the right lung, but the bronchial glands were not enlarged. Microscopically, examination of the left lung revealed a small area of early bronchial carcinoma with considerable interstitial fibrosis; most of the tumour cells had broken away from the basement membrane, had lost their columnar shape, and appeared as large oval or cubical cells, grouped in clusters amongst a mass of fibrous tissue. The whitish areas noted macroscopically showed broncho-pneumonic changes. The cerebral tumour was papillomatous in structure and showed definite acinar formation; the cells were columnar in type, large, with clear cytoplasm, and contained droplets of mucus (see Fig. 5).

CASE 8, male, aged 43, was admitted in June, 1928, complaining of headache, vomiting, and drowsiness of four months' duration. Visual hallucinations were present in the right field, but there was no history of fits. For several months his voice had been husky and he had coughed up a considerable amount of phlegm. He was well-nourished; his coöperation was poor; he was facile, and had a poor memory for recent events. There was bilateral papilloedema, and the visual fields were peripherally constricted. The left pupil was larger than the right, and there was slight right facial weakness. A fine tremor, more marked on the right, was present in the outstretched arms. The respiratory system was normal. Whilst in hospital he had several epileptiform convulsions. On July 17th a left temporo-parietal decompression was performed. Intracranial tension was markedly increased but no tumour was identified. His

FIG. 5.



Section of brain tumour (Case 8) showing papillomatous arrangement of cells.

condition became progressively worse and he died 14 days later.

Pathological Report.—The body was well nourished. A small, lobulated, firm, white tumour with much surrounding œdema was found in the right frontal lobe. Several enlarged glands were present under the manubrium sterni and at the tracheal bifurcation. In the upper lobe of the right lung a large clearly demarcated mass of growth was seen and there was a small tuberculous focus at the right apex. Microscopically the lung tumour was composed of ill-defined trabeculæ of columnar cells lying between dense strands of fibrous tissue; the cells were very few in number in the lung but more numerous and more definitely columnar in the glands. In the brain the tumour was very sharply demarcated, and around it there was a remarkable overgrowth of neuroglia with the formation of large-bodied spider cells. The trabecular arrangement of the cells was well seen in the brain (cf. Case 2), where a central blood-vessel was seen to

be immediately surrounded by a zone of connective tissue and small round cells, whilst more distally columns of large columnar cells, with vesicular nuclei, were arranged with their axes at right-angles to the vessel wall. There was considerable small round-celled infiltration in the fibrous tissue septa, which were not so well marked as in the primary pulmonary lesion.

CASE 9, male, aged 49, was admitted to hospital in April, 1929, with a ten days' history of left-sided Jacksonian attacks, followed by weakness of the left arm and leg. He had had a harsh cough for a week before admission but no previous history of chest trouble. He was dysarthric; his mentality was good and his pupils eccentric, reacting well to accommodation but sluggishly to light. Convergence and upward movement were impaired in both eyes; there was diplopia on looking downwards and to the right, and coarse, irregular nystagmus to this side. There was complete paralysis of the left lower face and weakness of the left trapezius and sternomastoid muscles, together with flaccid paralysis of the left arm and leg, an exaggerated left knee-jerk, absent left abdominal reflexes, and an equivocal left plantar response. The senses of passive movement, position and stereognosis were lost in the left hand. The respiratory system was normal. Two days after admission he was dyspnœic, had intense pain in the left shoulder, and became much more drowsy. The percussion note was dull over the left lower lobe. Vocal resonance was impaired and the breath sounds were distant, but no adventitious sounds were heard. A week later these abnormal signs had disappeared, but the neurological condition remained unchanged. A few days later coma supervened, and he died on May 5th, 1929.

Pathological Report.—The body was emaciated. A white mass was found at the root of the upper lobe of the right lung. This lobe was œdematous and bronchiectatic; broncho-pneumonia was present at the base of the left lung. In the upper post-central region of the right cerebral hemisphere there was a rounded, soft, slightly hæmorrhagic area of tumour surrounded by œdematous brain tissue. Microscopically the lung tumour was well demarcated; its cells, columnar in type, were arranged in trabeculæ separated by strands of fibrous tissue. The typical arrangement of cells grouped around a central vessel was seen, but for the most part they were arranged irregularly in cluster formation; a considerable amount of hæmorrhage was present. In the brain tumour the typical arrangement around a blood-vessel was well seen. The cells were larger than those in the pulmonary tumour; the nuclei were oval and vesicular. Fibrous tissue was scanty, but there was a considerable amount of hæmorrhage.

Clinical Discussion.

In part, the object of this investigation has been to determine whether careful examination of a series of secondary brain tumours from a primary lesion—for example, a carcinoma of the lung—would reveal a typical clinical picture or metastatic syndrome, the knowledge of which would have enabled an ante-mortem diagnosis to be made. As already pointed out, the relative part played in the clinical picture by the lung and brain lesions varies considerably in different cases. Hence attention has to be paid, on the one hand, to the signs and symptoms of the pulmonary neoplasm and, on the other hand, to the results of the secondary deposits; it will be remembered that we are here dealing with the third group mentioned in the introduction. The above case reports have been carefully scrutinised and an especial note has been made of the following points.

Sex.—All the patients in this series were males. The predominance of the occurrence of pulmonary carcinoma in the male sex is such a striking feature that it attracts the attention of all investigators.

Occupation.—Many authors have assumed that the increased incidence of pulmonary carcinoma in recent years and its prevalence in the male sex must in some way be connected with occupation. The Schneeberg miners in Saxony, where various metallic substances are present in the dust in the mines, are especially liable (Arnstein).[10] Hudson[11] noted a high incidence in grooms and suggested the frequent exposure to the inhalation of dust as the causative factor. Duguid[5] found that labourers formed the largest percentage (28 per cent.) of affected workmen following one occupation; the suggestion is also made that the increase is due to tar, which is used so much more now than formerly for road-spraying (Staehelin[12]). The occupations of our patients were—insurance agent, dairy manager, printer, labourer, clerk, motor-driver, tram conductor, and secretary. None of these occupations would appear to be of any ætiological importance.

Age.—The youngest patient in this series was 21 and the oldest 57; the average age was 42 (six of the nine patients were over 40). In Simpson's[9] series of 139 cases the average age was 48. This is rather above the average age incidence of cerebral tumours in general; in Tooth's series[13] the average age of all tumours was 35–40. We note, however, that 50 per cent. of the last 20 cases of primary frontal tumour admitted to the National Hospital were over the age of 40 when their symptoms commenced. Thus, although it is frequently stated that metastatic deposits from a primary pulmonary lesion occur late in life, the above figures must be borne in mind before attaching undue importance to this factor.

Previous History.—Shennan[14] thinks that the presence of old-standing disease (tuberculosis, chronic interstitial pneumonia) in at least 13 out of 22 primary carcinomata of the bronchus or lung cannot be ignored and must be regarded as possibly influencing the onset of the neoplasm. In eight out of our nine patients there was a history of some definite respiratory abnormality—bronchial asthma, pain in the chest, dyspnœa, persistent cough—or a lesion was suspected in the chest as the result of routine examination. In comparison, 7 only of the last 40 cases of cerebral tumour admitted to the National Hospital, Queen-square, gave a history of any respiratory abnormality and in none of them was a chest lesion suspected. Yet, despite the positive history, a presumptive diagnosis of a primary lung tumour with secondary cerebral metastases was made in only one case. Closer attention should be paid in doubtful cases to a history of respiratory abnormalities, and a more thorough clinical and radiographic examination of the thorax should be made.

Duration of Symptoms before Admission.—This varied from ten days to six months with an average period of about three months. The average duration of symptoms of cerebral tumours in general before coming under observation is longer than this. In the present series, the average total duration of illness was six months and the shortest period two months.

Mode of Onset.—Neurological symptoms were the first manifestation of disease in five cases, whereas chest and neurological symptoms appeared almost simultaneously in four. Of the seven patients in whom cerebral symptoms were the first or simultaneous manifestations of disease, in three the first complaint was of a psychological change; in two, Jacksonian attacks occurred and in two the symptoms were those of increased intracranial tension (headache, vomiting). In six of the cases the onset of the symptoms was fairly sudden and something of the nature of an ictus was observed, possibly due to neoplastic embolism.

Later Signs and Symptoms.—Correlation of the ante-mortem signs and symptoms with the post-mortem findings did not reveal anything striking, but only served to emphasise the many general difficulties encountered in the localisation of cerebral tumours and in the separation of true and false localising signs. Some workers have noted an especial difficulty in interpreting the signs in metastatic cerebral carcinomata and have attributed this to the presence of multiple tumours; of the seven cases with intracranial metastases the tumour was single in four.

Site of the Tumour.—Grant[15] and Krasting and Silvan refer to the special frequency of metastases on the left side of the brain and attribute this peculiar selection to the cerebral vascular arrangement. In our series, in three cases the tumours were bilateral, in three cases the neoplasm lay on the right side, and in only one was there a single tumour in the left hemisphere.

General Condition of the Patient.—There was extreme emaciation in four cases; in three the body nutrition

was fair, and in two it was quite good when the patient came under observation, but there was a very rapid loss of weight before death.

Pyrexia.—Five of the patients showed irregular pyrexia; two cases were apyrexial and in two the temperature was raised only in the post-operative period. Moise [16] found pyrexia in all his cases.

Papillœdema.—Of the seven cases in which intracranial neoplasms were found, three showed papillœdema and in four the discs were normal. Globus and Selinsky [17] state that papillœdema in these cases is infrequent.

Psychological Condition.—Three of the seven cerebral cases were almost normal, but in four the cerebration, coöperation, and memory were poor and depression or euphoria was present. In three cases the psychological symptoms were pronounced early in the disease and in each a frontal tumour was present. On the other hand, one of the patients, who was normal psychologically until about ten days before death, had tumours in both frontal lobes. The importance of a history of sudden onset of a psychosis in making a diagnosis of a metastatic cerebral carcinoma is emphasised, among others, by Grant, McCarthy, Crouzon, Hyde, and Curschman. The alternating periods of delusions and clarity, to which Siefert [19] called attention, were not observed in our cases. The general tendency was to an increasing drowsiness and lethargy, and to a gradual increase in mental confusion and a desire to be left alone, without any marked restlessness or noisy, busy delirium. In only one patient (No. 8), who was markedly euphoric and in whom a frontal tumour was found, was there any tendency to restlessness.

Speech.—Siefert [19] stated that a "peculiar disturbance of speech" was to be noted in these cases. Of our seven cases, some abnormality was observed in five. The nature of the defect seems to have been rather obscure; the descriptions in the clinical notes included slight defect, dysphonic, indistinct, husky, dysarthric. Possibly in some of the cases the abnormality was the result of intrathoracic pressure.

Recognition of a Syndrome.

Many points have been discussed in order to attempt to account for the inaccuracy of the ante-mortem diagnoses, to permit of criticism of the findings of previous investigators, and to determine whether a "cerebral-metastatic syndrome" could be established. The conclusions arrived at by various authors vary considerably. For example, Winkelman [9] and Shelden [18] state that there is no characteristic group of symptoms by which a metastatic tumour of the nervous system can be recognised. Other investigators are intermediate in their views and think that there are no definite peculiar physical signs but that there are some peculiar features, such as abnormal wasting and the sudden development of a psychosis. Globus and Selinsky [17] were tempted to regard the following as characteristic of metastatic brain tumours: (*a*) the acute and precipitate onset of cerebral manifestations, often of a disjointed and disseminated character; (*b*) symptoms of intracranial pressure out of proportion to the neurological findings; (*c*) infrequency of papillœdema; (*d*) meningeal signs and radicular pain; (*e*) rapid decline with diffuse signs; (*f*) psychotic manifestations. Seifert [19] gives the following picture which he believes leads to the probable diagnosis of multiple carcinomatous metastases in the central nervous system: (*a*) occurrence in advanced age; (*b*) rapid failure of health; (*c*) increasing apathy; (*d*) alternating periods of delusion and clarity; (*e*) peculiar speech disturbances; (*f*) infrequent papillœdema; (*g*) pain in the neck; (*h*) vesical disturbances; (*i*) weakness of the extremities and the right seventh nerve; (*j*) changes in the gait and tendon reflexes.

Our observations lead us to think that it is incorrect to say that there are no special features by which these cases may be recognised; on the other hand, there is not a clear-cut cerebral metastatic syndrome characteristic of all cases whether the primary lesion is in the lung or elsewhere. Nevertheless, there are certain features which are common to the majority of cases and a typical case might be portrayed as follows: An elderly patient, with wasting—out of proportion to the extent and duration of the cerebral symptoms—early confinement to bed, pyrexia, a short history with possibly a sudden onset of a psychosis followed by a temporary recovery, radicular pain, vague chest signs or a history of a respiratory abnormality, and a rapid progression to death.

Points such as the infrequency of papillœdema, speech disturbances, vesical disturbances or multiplicity of cerebral signs do not appear to be of sufficiently distinctive value to merit inclusion. Although the features which are most frequently encountered in these cases have been combined in order to present a composite typical picture, it must be remembered that some cases, possessing only three or four of these points, may present a markedly different appearance. For example, Case 1 was a man of 37, who was apyrexial, normal psychologically, and who showed no abnormal chest signs. In any obscure cerebral lesion, it is important to bear in mind the possibility of a metastatic cerebral tumour and the necessity for a careful and complete clinical and radiological examination.

Pathology.

The views on the pathology of primary carcinoma of the lung have recently undergone considerable change. At one time it was usual to classify these tumours into: (*a*) columnar-celled type arising from the bronchial mucous membrane; (*b*) polyhedral-celled type arising from the bronchial mucous glands; and (*c*) squamous-celled type from the alveolar epithelium. Shaw Dunn [21] has pointed out the extreme difficulty in classifying pulmonary neoplasms according to this scheme, in view of the pleomorphic nature of the cells composing the neoplasm. Duguid [5] says: "Although there is a wide variation in the structure, even the most remotely divergent cases appear to be linked together by a series of intermediate types, which makes it difficult to see where any division in classification could be made." Shennan [14] stresses the marked degree of pleomorphism of the cells seen in a great proportion of these tumours, but considers that he is able to recognise six types. In addition Barnard,[20] in 1926, showed that many of the so-called mediastinal sarcomata were in reality carcinomata of pulmonary origin; they were designated by him "oat-celled" carcinomata. He considered that there were two groups of pulmonary carcinomata: this oat-celled variety and an obviously carcinomatous type in which the cell picture varied from the columnar, mucus-secreting type at one end of the scale to a squamous-celled type at the other, with intervening forms showing polygonal, spheroidal, or cubical cells. These facts are recalled because in all but one case of our series the primary tumour was situated in or near the hilum of the lung and at one time would probably have been regarded as a mediastinal sarcoma.

The tumours were firm and white in colour, and in seven of the cases were found on the right side. Evidence of bronchial obstruction—pulmonary collapse or bronchiectasis—was present in six cases. Microscopical examination emphasised the pleomorphic nature of the cells composing these tumours. The cells, roughly columnar in type, were arranged in solid trabeculæ and showed a tendency to the formation of acini. Between the trabeculæ were situated strands of fibrous tissue which carried the blood-vessels. A cross-section of such an arrangement represented what might be regarded as a unit, the whole picture being composed of a collection of these units. Each unit consisted of a central blood-vessel surrounded by connective tissue which was separated from an outer layer of connective tissue by a clear area; in this space, in many cases, collections of small round cells were found. Abutting on this outer layer of connective tissue was a single row of columnar cells

and beyond this again was a mosaic of cells of cuboidal or spheroidal type. The cells varied markedly in shape and size, some being oval, some columnar, and others cubical; in addition, groups of cells were irregularly clustered between the units. The cell nuclei were large and vesicular and numerous mitotic figures were seen in many of the sections (see Figs. 2 and 3).

Several of the features of the metastases have been pointed out in the descriptions of the cases, but we would call attention again to the production in three cases of cerebral or spinal symptoms from secondary deposits confined to bone and not apparently invading the nervous tissue. Globus and Selinsky have remarked on this selective action of these secondary deposits in certain cases. The "hollowed-out and oyster-shell" appearance on the inner aspect of the skull and vertebræ formed a conspicuous feature; in one case the tumour was adherent to the dura, but there was no macroscopical evidence of involvement of the pia-arachnoid. Cornwall [21] has recently described a case where metastatic involvement of these membranes was apparent on microscopic examination, although there was no evidence macroscopically of tumour formation. Invasion of the meninges, apparent only on microscopical examination, is also referred to by Morse.[23] Winkelman and Eckel [9] subdivided these cases according to whether the dura or pia mater was involved; the former they termed pachymeningitis carcinomatosa and the latter meningitis carcinomatosa. This meningeal invasion probably accounts for the presence of constant and severe radicular pain in some of the cases. We have already noted the strawberry-like appearance of the intracerebral tumours, their surrounding zone of hæmorrhage, and their strict macroscopic demarcation from the surrounding brain tissue. Microscopically an overgrowth of neuroglia with spider-cell formation could be demonstrated at the margin of the tumour. The microscopical appearances of the secondary deposits were similar to those of the primary pulmonary tumour. On the whole, however, the cells were larger in size and varied in shape from true columnar to oval; in many cases an alveolar arrangement could be made out. The nuclei were deeply stained and rather small. Fibrous tissue varied in amount but was, generally speaking, more scantily distributed than in the lung tumours.

Conclusions and Summary.

1. Nine cases of primary lung tumour with metastases giving rise to cerebro-spinal symptoms are reported, with clinical and pathological details.

2. The suggested factors in the ætiology of primary lung carcinoma are discussed; no further information is forthcoming as to the cause or the recent increase in incidence.

3. The views of previous investigators as to the existence of a cerebral metastatic syndrome, or peculiar features by which a metastatic cerebral tumour could be recognised, are criticised.

4. A composite typical picture of a metastatic cerebral carcinoma is presented.

5. The macroscopical and microscopical appearances of the lung and cerebral lesions are detailed.

6. The necessity for bearing in mind the possibility that a cerebral lesion may be a metastatic carcinoma from the lung or some other source is emphasised.

7. The difficulties in diagnosis necessitate a complete and careful examination, clinical and radiological.

We wish to express our gratitude to the physicians of the National Hospital, Queen-square, for permission to publish reports of the cases under their care, and to Dr. J. Godwin Greenfield for his ready help and kind assistance, especially in the preparation of the microphotographs.

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"RUSH" INOCULATION,

WITH SPECIAL REFERENCE TO HAY-FEVER TREATMENT.

BY JOHN FREEMAN, D.M., B.CH. OXF.,

DIRECTOR OF THE DEPARTMENT OF CLINICAL BACTERIOLOGY, ST. MARY'S HOSPITAL.

THE approach of the hay-fever season recalls to the mind of the immunologist the whole question of desensitisation—for it is with hay-fever that we have the greatest and longest experience of a specific sensitisation disease. Recent developments in desensitisation of hay-fever patients are most easy to explain when looked at historically.

Passive Immunisation with Serum.—In 1903 W. P. Dunbar, in Hamburg, made the first attempt to desensitise hay-fever subjects to grass pollen by passive immunisation, utilising for this purpose the sera of horses and geese.[1] That method has gradually fallen into disuse.

Leisurely Desensitisation.—In 1909 Noon and I began inoculating hay-fever subjects with a grass pollen vaccine.[2] We began in the off season—i.e., when there was no pollen about—say at the beginning of March; inoculations were given weekly merely because our out-patients at St. Mary's Hospital were in the habit of coming every week. After we had arrived at what we believed to be an effective dose we made little or no attempt to increase it—being influenced in this by the routine practice for therapeutic immunisation. This plan has worked fairly well, and is still perhaps the method in most general use. In view of subsequent quicker methods I have called this older method "leisurely."

Intensive Desensitisation.—Later (1924) when desensitising horse asthmatics or other animal sensitives to horse dandruff, &c., I fell into the way of inoculating these patients every day with gradually increasing doses (a 10 per cent. to a 20 per cent. increase). There was no off season with these people, and they were usually in a great hurry to go and hunt, or look after their dogs, or retrieve their cats from quarantine with the veterinary surgeon. This intensive method proved so successful, and was in some ways so convenient, that in 1926 I gave it to a number of hay-fever patients, and have used it increasingly ever since.[3]

"Rush" Desensitisation.—The anti-anaphylaxis method of Besredka suggested a quicker desensi-

[1] Dunbar, W. P.: Zur Ursache und Specifischen Heilung des Heufiebers, München, 1903.

[2] Noon, L.: THE LANCET, 1911, i., 1572; Freeman, J.: Ibid., 1911, ii., 814.

[3] Freeman, J.: THE LANCET, 1927, i., 940.

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tisation, which I have used since 1928. The injections are given every hour and a half to two hours throughout a 14-hour day. Thus a very satisfactory course can be put through in from two to four days. The patient must go into hospital or some such institution, or at any rate be in the charge of a trained nurse, and under the constant supervision of the doctor. As with the previous methods a safe initial dose is estimated by the intensity of the diagnostic reaction (see below); a very slightly sensitive person might receive, say, 100 or even 200 units of pollen; a very sensitive person—i.e., one giving a centimetre-broad wheal when pricked through a drop of pollen extract of 500 unit strength—had better receive no more than 20 or 30 units for the first dose. As with the intensive course an increase of 10 per cent. to 20 per cent. on the preceding dose is made at each re-inoculation if this can be borne by the patient without any discomfort. If there is a reaction, then the percentage increase is slowed down, or stopped, or a smaller dose is given. Because the doses are mounting in geometrical progression it only takes a few days for a dose of, say, 100 units to mount to perhaps 20,000.

The notes of a few typical cases will show the general nature of the "rush" method of desensitisation and its special application to hay-fever. My first case so desensitised was a dust asthma case (presumably mould spores), the second was a fish-sensitive, the third was a horse-asthmatic, and the fourth a hay-fever case from the batch so treated in 1929.

A Dust Asthma Case.

A. B.—In 1928 a man came into our male laboratory ward for intractable asthma. He had neither food sensitisation nor animal asthma. He was much worse in winter when he had "colds," and generally, by a process of exclusion, the case seemed to resolve itself into one of a bacterial sensitisation. At any rate the bronchial infection was an "asthmatic factor" in him; so far as we could see at first it was the most important factor; and it was one we could treat. Suitable inoculations of a bacterial vaccine—aided, as subsequent events suggest, by mere absence from his home—"cured" him and he was discharged from hospital.

He came back three days later, just as bad as ever, with the story that he had relapsed on the very first evening at home. Similar treatment (but in a shorter time) again "cured" him, and he was again discharged from hospital; but he came back next day with the same story of a relapse. A few days later he left the hospital for the third time, quite well, but saying "Keep my bed warm for me, I shall probably be back to-night"; he came back in an hour or so—and just as bad as ever. Clearly we had here a locality factor in his asthma. After he had got well for the fourth time in hospital he was found to react violently to an extract of the fine dust from his house; by intradermal injections he was 3000 more sensitive than the normal man. As he had spent time enough in hospital I embarked on the "rush" method.

He got subcutaneous injections at first every 20 minutes; later on he got them every hour (except during the night), beginning with a very weak dose (80 units) and increasing roughly by 20 per cent. at each re-inoculation. At the end of three days I got him up to a dose of 2 cubic centimetres of the strongest extract I had made—i.e., a dose of 200,000 units. He was then discharged from hospital for the fifth time, and again quite well. He got no asthma at home that night or on subsequent nights; he has had no serious attacks since then.

This quick success seemed—both to the patient and inoculator—more cogent than that of the older and more protracted treatments; and as it was clearly of general application it has since been used[4] with success for desensitisation to animal asthmas (horse and cat), for food sensitisations (fish and egg), and particularly for hay-fever cases. I have tried it for a number of bacterial sensitisations, but have not been so successful with them. Here there is a technical difficulty because attempts at desensitisation influence the growth of the bacteria which are producing the toxæmia; but even here it is believed that "rush" desensitisation has a future.[5]

FIG. 1.

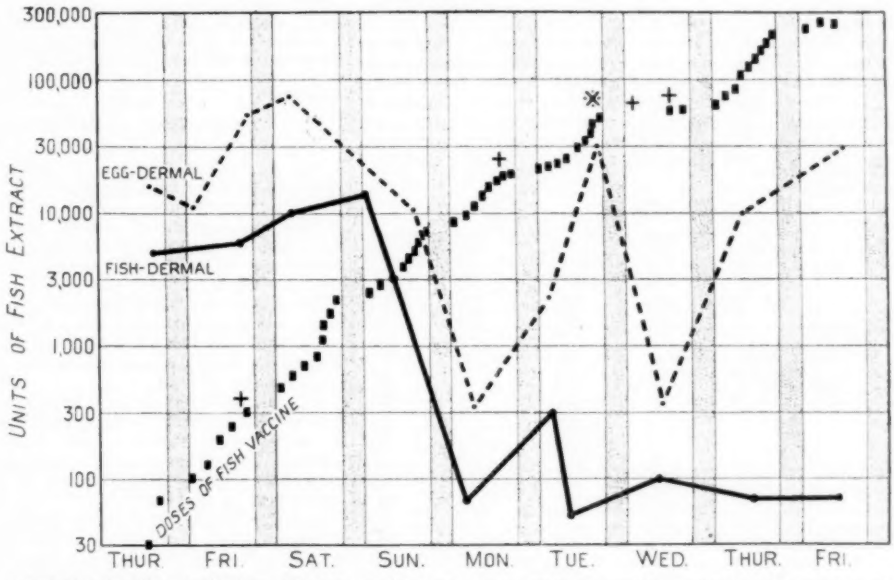


Chart showing the rapidly increasing doses of fish vaccine given to a sensitive patient over a period of eight days, and the effect on his skin reaction to fish and to egg. + = urticaria. ✻ = marked urticaria and headache.

A Fish-Sensitive Patient.

C. D., a boy of 7 years with bad bronchial asthma, had also a number of food sensitisations which were not only helping to keep up his asthmatic condition but were also making him an undernourished and undersized little boy because of the difficulty in feeding him. He was particularly sensitive to fish; his lips blistered on contact with this food which, if swallowed, caused vomiting and diarrhœa, general urticaria, headaches, and increase of his asthma—the usual crop of symptoms in fact. He was

[4] Hart, P. D'Arcy: Proc. Roy. Soc. Med. Section for Study of Diseases in Children. Jan., 1930, p. 265.

[5] In the case described above it was probable that A. B. was sensitive to the mould spores of the locality; it was their presence in the dust which caused him to react to it, and which made an extract of the dust such an efficient antigen. Indeed, he proved slightly sensitive to a large number of stock extracts of mould cultures which I tried on his skin. (He was hardly sensitive at all to Storm van Leeuwen's A. fumigatus strain.) But the fact is that the mycology of such cases is too difficult for our present knowledge; for example, the inoculation department put at my disposal for two years the services of Mr. la Touche, a skilled mycologist, and the chief thing we learnt was the complexity of the business. In one case only of locality asthma we isolated, and as far as possible identified, many hundreds of different strains from various damp and mildewed houses without feeling convinced that we had got near the botanical solution of the case.

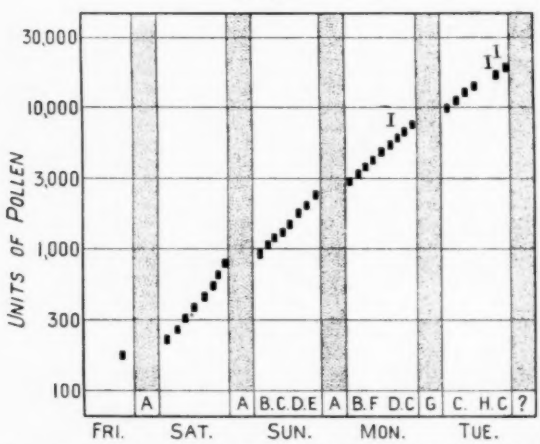
put through a "rush" inoculation using as antigen the juices expressed from cod fish—1 c.cm. of the undiluted juice being taken as a million units.

Fig. 1 shows the mounting doses, which rose from 30 units to 200,000 units in eight days. The chart also shows the effect of these doses on the skin reaction to fish and egg to which he was also sensitive; these were made and measured in Sir Thomas Lewis's way (as described later in this paper), and marks have been assigned to them according to the diameter of the wheal and of the erythema.

After the treatment he was put on to a fish diet, and given an ounce of cod-liver oil t.d.s., which he liked. Ever since then he can eat fish, and has daily doses of cod-liver oil and malt. He is much less faddy about his food, he is putting on weight, and has practically no asthma.

It should be confessed that the skin reaction to fish in this case which disappeared so beautifully under "rush" treatment returned a few weeks later, and now (five months later) is back at its old intensity. This is the general experience in such cases, but does not mean that all the dietetic advantage of the desensitisation has gone; it does suggest, however, that the patient will relapse in this respect also unless the improvement is maintained by occasional injections of a fish vaccine or by insistence on a fish dietary. Another point should be noted: C. D. was also sensitive to egg, and though, as shown on the chart, the skin reactions to this did not diminish so rapidly as the fish skin reactions, yet they became irregular and did diminish to some extent, and the

FIG. 2.



Reactions in patient suffering from hay-fever to rapidly increasing doses of pollen. Stippled areas in this Fig., as in Fig. 1, indicate nights. A = A good night. B = Reaction at site of inoculation. C = Rash on arms and body. D = Sneezing. E = Throat and nasal congestion. F = Headaches and drowsiness. G = Restless night. H = Rash on body, puffy eyelids. I = Adrenalin 0·08 c.cm. given. ? = Patient out of hospital.

boy was found to be able to eat eggs, a feat which he could not perform before the treatment. This is apparently a non-specific immunisation comparable presumably to the effect produced by protein shock.

Horse-Asthma.

E. F., a girl of 7, was a horse-asthmatic but wanted to ride her pony, so elected to go into a nursing home to be "made a pin-cushion of." Starting with a dose of 60 units of horse dandruff vaccine she got to a dose of 2450 in four days. After this dose she had a sharp bout of urticaria, her lips swelled, and she felt "funny." The doses were stopped, and three hour later she suddenly went very pale with a fluttering heart. She had, it appeared, several times in the past had similar faint attacks, and this one, like the others, quickly passed away; but it was judged wiser to send her into the country to try the effect of her pony on her. She has ridden daily without discomfort, and she is having a dose of 2000 units every ten days or a fortnight to keep up the good effect, and this 2000 dose may perhaps be cautiously increased.

This case will serve to show the care necessary in conducting what is after all a very strenuous method of treatment. Such treatment for the uncomplicated cases of horse-asthma seems to be consistently successful but they tend to relapse after a period of from three months to a year. However, if a maintaining dose is given every ten days or so, the condition can be kept up indefinitely. I have in this way kept going a number of such cases for three or more years; and they hunt regularly.

Hay-fever.

G. H. is a young gymnastic instructress with uncomplicated hay-fever. She had been inoculated by me in past years with pollen vaccine somewhat perfunctorily but more or less successfully. In the spring of 1929, owing to pressure of work, she had practically no preventive treatment. Early in June she arrived in a desperate state, a mental and physical wreck, and quite unable to carry on her work. She had been getting steadily worse for the last two weeks, but had tried to stick it out. She was taken into hospital and put through a "rush" course of pollen inoculations (see Fig. 2). In four days the dose had risen from 160 units to 17,000 units. The patient then left hospital to catch up the arrears of work—after which she went and "rolled in a hayfield without being able to get a sneeze out of it." She was cured—for that year at any rate.

Advantages of the "Rush" Method.

The advantages of the "rush" method are:—

(1) A saving of time. Not only does the patient become desensitised in a shorter space but there is a saving of tiresome details, such as remembering to go for and getting the dose, and perhaps afterwards waiting for possible reactions. All this amounts to an unconscionable dislocation of affairs if repeated day by day.

(2) Since the business can be put through in a few days a convenient time may be waited for; one may even wait till the patient is in real distress from the disease—always a good time for getting a patient to do what he is told.

(3) As the patient is under observation all the time, a competent nurse can judge the onset and extent of any reaction more exactly, and can adopt counter-measures—e.g., repeated minute doses of adrenalin—more easily than is possible when the patient is at large.

(4) The doses can be adapted to the particular needs of each patient more exactly. Patients vary in their capacities—so may these particular antigens. Pollen vaccine is not precisely the same from year to year; it is difficult to standardise a vaccine of cat scurf. To put this another way, with "rush" desensitisation the exact initial dose does not matter so very much. At the worst one only wastes a day before getting effects.

In choosing a system of desensitisation one need not, of course, adhere rigidly to the leisurely, intensive, or "rush" methods; an intelligent blend may serve one's turn better. Thus in the early spring doses may be put in when occasion offers; if by mid-May there have been too few the pace may be quickened up even to once a day; and if unhappily grass meadows demonstrate in June that this has been insufficient, then a short "rush" treatment in a nursing home should clinch the matter.

Whatever system or combination of systems of inoculation is employed, it is necessary to make sure that the sensitisation is to one single foreign substance; or if it is multiple, that the other sensitisation will not interfere with success of treatment—e.g., it is courting failure to desensitise a hay-fever subject with grass pollen only, if the patient is sensitive to, say, a bacterial infection or to mould spores in his house.

Again it is just as necessary to make certain of the specific diagnosis before beginning treatment. For this purpose any of the established methods may be employed: (1) for eye reactions, carefully graded dilutions of the extract may be dropped into the conjunctival sacs. (2) for dermal reactions these same extracts are rubbed into scratches on the skin. (3) for the intradermal reactions a measured quantity

of a known extract is injected into the thickness of the skin. (1) and (3) are the most delicate, but, on the other hand, greater care has to be taken not to test too severely. A convenient method is that described by Sir Thomas Lewis[6] in using histamine on the skin; you place a drop of the extract on the forearm or thigh of the patient and then prick through it lightly (not more than a millimetre) into the thickness of the skin with any sharp needle; after this the drop can be wiped off the skin. A control drop of water or normal saline should be pricked through on a neighbouring site—and if the same needle is used the control prick had better be done first. In a positive reaction the resulting wheal or erythema will be observable in 7 minutes or at its best in 10 or 12. The reaction can be recorded by placing a microscope slide over the area and inking in the prick, the margin of the wheal, and the margin of the erythema (see Fig. 3).

FIG. 3.

Record of a typical wheal and the margin of an erythema by a tracing on a microscope slide.

By this method a moderately sensitive hay-fever subject will give a just recognisable reaction if a 500 unit per cubic centimetre extract is employed, and a considerably larger reaction with, say, the 5000 unit extract. If a supposed hay-fever subject does not give an easily recognisable reaction with the 5000 unit extract it is doubtful if the symptoms complained of can be due to hay-fever, and desensitisation will not help him.

Conclusion.

The "rush" method of desensitisation offers many advantages when used either alone or in combination with other systems. To get successful and safe results, however, it is just as necessary as ever to be cautious.

[6] Lewis and Grant: Heart, xi., 209.

Clinical and Laboratory Notes.

TWO UNUSUAL CASES OF CALCULI IN THE URINARY TRACT TREATED BY OPERATION.

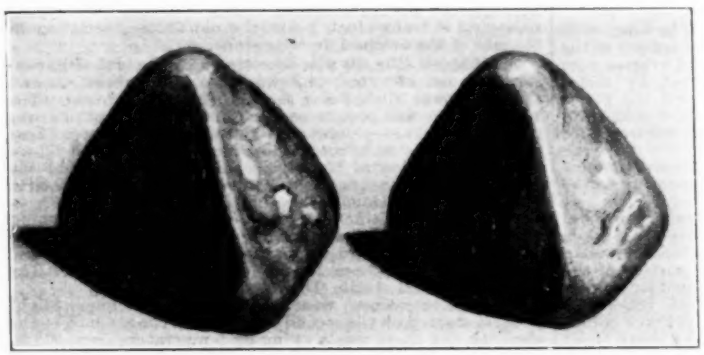
BY LOUISA MARTINDALE, M.D., B.S. LOND.,
SENIOR HON. SURGEON, NEW SUSSEX HOSPITAL, BRIGHTON.

THE two cases here described are both unusual and interesting.

Vesical Calculi Treated by Suprapubic Lithotomy.

The first patient, an unmarried woman of 57 years, sent to me by Dr. Helen Scatliff and Dr. Rodie Parkhurst, was admitted into the New Sussex Hospital on Jan. 4th, 1928. For three years she had had difficulty and pain on micturition, only passing very small quantities at a time; there was no history of hæmaturia. For the last six weeks the pain had been considerably worse, especially at night, so that insomnia and "feverish attacks" had been marked features in the case. The frequency had also increased during the last few weeks until, on admission, the patient was passing urine as often as every ten minutes. She was thin and pale and looked ill. Her appetite was very poor. She showed an evening temperature of 99° F. Nothing abnormal was found in the heart, lungs, or abdomen, but a hard, tender mass was felt anteriorly per vaginam. The urine was very offensive, thick, and alkaline, with much pus and mucus, a specific gravity of 1020, and a slight trace of albumin. Blood was present but no sugar.

FIG. 1 (Case 1).



Two symmetrical pyramidal vesical calculi (natural size).

Except for varicose ulcers of both legs since the age of 16 the patient had had no illnesses. The menopause had occurred ten years earlier. The family history was apparently healthy.

FIG. 2 (Case 2).

Ureteral calculus (natural size).

On Jan. 5th, 1928, the patient was cystoscoped. The bladder would only retain four ounces of weak boric solution. The end of the catheter was felt to impinge upon a hard object inside the urethral orifice. On introducing the cystoscope it was impossible to get a view of the bladder mucous membrane, but a large foreign body could be felt, and the sharp shadow seen somewhat resembled two edges of wire. Suprapubic lithotomy was therefore performed under general anæsthesia on Jan. 7th. Twelve ounces of boric lotion were introduced into the bladder. The patient was then placed in the Trendelenburg position, a median suprapubic incision about two inches long was made through the abdominal wall, and the bladder was exposed below the peritoneal reflection. A sound was introduced into the bladder through the urethra and with great difficulty identified by the finger through the abdominal incision. The bladder was then opened. A large hard object was felt inside the bladder, seized with forceps, and brought out. This proved to be a large, symmetrical, pyramidal calculus. Another calculus of exactly similar shape, size, consistency, and appearance was found in the bladder and similarly delivered. No further stones were found. A large drainage-tube was inserted into the bladder, and the bladder and abdominal walls were closed in the usual way.

Recovery was slow. For the first four days after operation the pulse-rate was about 120; the pyrexia was moderate and lasted 11 days. On the second day a self-retaining catheter was inserted through the urethra; bladder washouts were given daily. The hæmaturia and pyuria gradually cleared up, the wound healed, and the patient was able to leave hospital by March 27th. She returned to my follow-up clinic six months and one year after in excellent health.

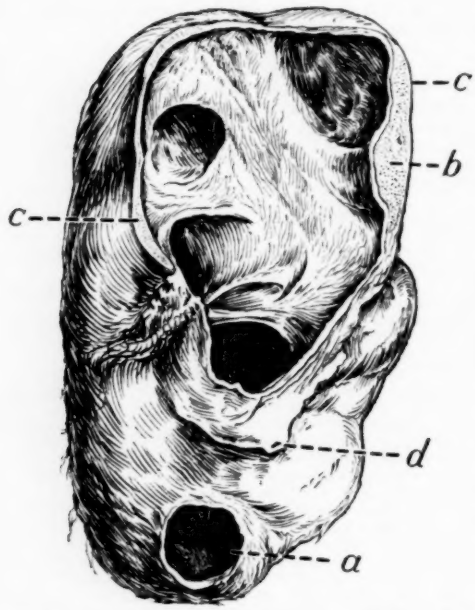
Examination of calculi.—The two calculi (Fig. 1) are of similar shape, size, and consistency. Each is pyramidal, having four surfaces, each of which is 4 cm. long, whitish-grey in colour, and on section showing concentric laminated surfaces. X ray examination showed no differentiation of structure, and no central foreign body (Dr. E. M. Magill). "Each stone weighs 40·5 g. (the two together approximately

4 oz.), and is composed of calcium phosphate with small quantities of calcium carbonate and organic matter" (Dr. Cavendish Fletcher).

Ureteric Calculus Treated by Ureterolithotomy and Later Nephrectomy.

The second patient, a lady aged 34, was brought to me by Dr. Winifred Buckley on Jan. 31st, 1927, complaining of pain in the left groin for the last three years—coming on in "attacks," worse on putting her feet to the ground, and lasting on and off for five to six weeks at a time. She also described attacks of pain over the bladder, and great pain during the act of micturition, with a feeling of soreness after; there was never any frequency, and the quantity of urine passed was about one pint in 24 hours. There had been no previous illnesses and there was no family history of tuberculosis. Menstruation was irregular, with some dysmenorrhœa.

FIG. 3.



Hydronephrosis due to obstruction in ureter. (*a*) Round opening made to show dilated pelvis. (*b*) Thinning of kidney tissue. (*c*) Cut walls showing dilated pelvis. (*d*) Cut ureter. (Half the natural size.)

The patient was well developed and healthy looking, with a good colour. There was a slight definite tenderness in the left iliac region. The lungs, heart, uterus, and ovaries were normal, and nothing abnormal was detected by rectal examination. The temperature was 98° F. and the pulse-rate 82. The urine was of a pale, clear, yellow colour, its specific gravity was 1005, and its reaction neutral. No albumin, sugar, blood, or pus were found.

On Feb. 11th I performed a cystoscopy under scopolamine and morphine. The right ureteral catheter passed up to the right renal pelvis with ease and secreted freely. The left opaque catheter stopped 7 cm. beyond the vesical ureteral orifice and there was no secretion. Skiagrams were taken by Dr. Magill on two different occasions. These showed a shadow the size of a date-stone in the pelvic portion of the left ureter, about 7 cm. from the ureteral bladder orifice. The left kidney was enlarged, chiefly in the transverse direction, the lower pole reaching as low as the lower border of the third lumbar vertebra. Within its area seven small shadows were seen, suggestive of renal calculi.

On Feb. 15th I operated under general anæsthesia. The patient was first put in the lithotomy position and the left ureteral catheter was passed up to the stone and left in situ. She was then put in the Trendelenburg position and a Gibson's incision made, one inch above and parallel with Poupart's ligament, and continued up to the anterior superior iliac spine and beyond it. It was then deepened to divide the anterior sheath of rectus and continued between the fibres of the external oblique and internal oblique, and the peritoneum was carefully pushed inwards to get at the calculus extraperitoneally. The ureter was exposed and opened one inch above the stone, which was "milked" upwards and extracted. A fine rubber catheter was passed up into the kidney, which was much enlarged, and about 3 oz. of urine drained off. A probe was then passed down into the bladder, to be sure that there was no further obstruction. The opening in the ureter was closed with one layer of interrupted fine catgut stitches, followed by an uninterrupted catgut suture embedding the first layer, and the abdominal wound was closed in the usual way. Drainage was provided by means of a strip of dental rubber.

The ureteric stone measured 1·7 by 1 cm. It was yellowish-brown in colour, covered by crystals, and consisted of calcium oxalate (Fig. 2).

Convalescence was long and tedious and complicated by pyrexia starting on the second day. For three weeks the evening temperature varied between 100·6° and 101·8° F. and the pulse-rate between 98 and 120. On Feb. 24th a blood count by Dr. G. L. Eastes showed 21,000 white corpuscles, composed of: small mononuclears, 9·4 per cent.; large mononuclears, 7 per cent.; polymorphonuclears, 83 per cent.; and mast cells, 0·6 per cent. The red discs appeared normal, and there were no abnormal types of cell. Dr. Eastes, however, reported that "considering the extensive operation and the leucocytic infiltration incidental to repair of such a large area," he would not "say there was necessarily pus." On March 11th the leucocyte count was: 15,600 per c.mm., and the differential count showed: polymorphonuclear leucocytes, 71 per cent.; lymphocytes, 28 per cent.; eosinophils, 0·6 per cent.; basophils, 0·6 per cent.

The patient, however, made steady though slow progress and was able to leave the home by the end of March, free from all symptoms. She returned to her work in the course of the next six weeks.

On Dec. 13th she returned to me, saying she had been well up to the beginning of the month, except for occasional backache. Since then, however, she had had three attacks of bad pain in the back and left groin. They were accompanied by a slight rise of temperature and insomnia, and she feared another ureteric stone. On examination I found the left kidney enlarged and tender. The patient, however, looked well, and was able to work. Dr. Magill made an X ray examination and diagnosed enlargement of the left kidney, which still contained small shadows suggestive of renal calculi.

I therefore performed another cystoscopy on Dec. 15th.

The right ureteric catheter passed with ease and secretion was rapid. The left ureteric catheter passed 4 cm. only, and although I could see some secretion from the left ureteric orifice round the catheter, I could get no flow of urine through the catheter itself. Urine from the right kidney was amphoteric and showed a minute trace of albumin, but was quite free from pus, and no bacteria were found in stained smears. Culture showed it to be sterile. Urine from the bladder was amphoteric, and quite free from albumin and pus, and no bacteria were found either in smears or culture.

On Jan. 15th, 1928, as the pain was occurring daily and the patient complained of vomiting every morning and insomnia, I decided to perform a nephrectomy. Under general anæsthesia I made a lumbar incision, which had to be prolonged in order to remove the much enlarged adherent kidney. At the same time I dissected out the ureter, removing it to one inch below the old fibrosed stricture at the site of the original ureteric stone.

The kidney (Fig. 3) was four times its natural size, contained 8 oz. of urine, and was markedly lobulated, and the pelvis was dilated and saccular (hydronephrosis). The kidney tissue was compressed and atrophic. A section was taken of the kidney substance and the features were those of a subacute or chronic inflammatory reaction. There was an infiltration of leucocytes and plasma cells and the characteristic changes of a chronic interstitial nephritis. Much of the functional tissue had been destroyed.

The urine was faintly alkaline, contained a small amount of albumin, and yielded a small red deposit which consisted of blood with some transitional epithelial cells. No pus and no bacteria were seen in the Gram-stained smear. The cultures were all sterile (Dr. Eastes).

The convalescence was again a stormy one. Slight pyrexia started on the second day. From the seventh to the eleventh day there was a swinging temperature from 97° F. in the early morning to 103° or 104° F. in the evening. On Jan. 31st the leucocyte count was 11,800 per c.mm. On Feb. 1st the temperature became normal. On the 3rd, however, both pus and albumin were present in the urine, and on Feb. 14th a catheter specimen showed an acid urine with a distinct trace of albumin and a fair quantity of pus with many bacilli, which grew well in culture as a *Bacillus coli*. With treatment, however, this quickly disappeared, and the patient was able to leave the home on Feb. 29th.

On Sept. 10th, 1928, I found the right kidney enlarged and the urine normal. The patient was well and feeling better than she had done for years and able to enjoy her

work. Her subsequent history has been very satisfactory except for an acute appendicitis, for which I performed an appendicectomy on Nov. 17th, 1929.

The chief points of interest in Case 1 appear to be:

1. The unusual occurrence of a bladder stone in a woman. Only 5 of the 371 cases operated upon in St. Peter's Hospital during the decade under review were females, and in at least two of these the stone was formed round a foreign body. (See Swift Joly's recent work on "Stone," 1929.) Sir Peter Freyer operated upon 31 females out of a total of 1623 patients. E. Keyes, 1928, states that he has operated upon over 70 men and one woman, and his father upon 250 men and three women. I have operated on three women for vesical calculi.

2. The unusual size and the extraordinary resemblance of the two calculi.

3. The recovery and subsequent good health of the patient, for the mortality of operation upon large bladder stones is extremely high. These cases invariably have a gravely impaired renal function through chronic renal infection (E. Keyes, "Urology," 1928).

The chief points of interest in Case 2 are:

1. The marked leucocytosis and pyrexia following the removal of the ureteral stone, considering the non-infected condition of the kidney as found in the subsequent nephrectomy.

2. The fibrotic stricture either at the site of the incision into the ureter or at the site of the stone as it lay in the ureter one inch below the incision, necessitating a nephrectomy later.

Here it is difficult to decide whether it was the impaired function of the hydronephrotic kidney (already caused by the ureteral calculus) which led to fibrosis and stricture, or whether the double row of stitches was the cause. In view of the condition of the kidney found at the second operation, the former seems the more probable explanation.

INJURIES OF THE FASCIAL INSERTIONS OF MUSCLES.

By B. S. Nat, M.B. St. And., F.R.C.S. Eng.,
CAPTAIN, INDIAN MEDICAL SERVICE.

THE following two cases that came under my care in 1926–27 while serving at Razmak on the frontier illustrate the clinical importance of these injuries, hitherto not well recognised, in healthy young adults.

CASE 1.—A Gurkha sepoy complained of weakness and a sense of insecurity in his left knee. He traced it to a strenuous game of football at Dehradun 18 months ago. While kicking he felt something give way in his knee with a clicking noise followed by pain. He noticed that he could not extend the knee on account of pain and the joint soon became swollen. With rest followed by massage his knee recovered in about ten days. He has never had any repetition of this kind of attack but has suffered from pain and weakness in the limb which became worse after marching. As he had been labelled malingerer at his previous station he did not report sick till his regiment came to Razmak.

Examination.—There was no fluid in the knee. Quadriceps well developed. No localised tenderness at any point. The knee could be extended fully without any pain. On the outside of the knee in front of the tendon of the biceps a band (the iliotibial of fascia lata) could be felt slipping forwards and backwards over the outer aspect of the lateral femoral condyle. When the band was prevented from its abnormal to and fro movement by pressing it against the femoral condyle the clicking noise accompanying extension disappeared.

Diagnosis.—The absence of any fluid in the synovial cavity of the knee suggested an extrasynovial cause for the complaint and its accompanying sound. On careful examination the abnormal to and fro movement of the iliotibial band was noticed. The case was, therefore, diagnosed a tear of the deep fascia which fills up the triangular interval between the tendon of the biceps femoris and the iliotibial band.

Operation.—Under novocain block an incision was made over the triangular interval above referred to and an inverted V-shaped tear was seen in the deep fascia. The edges of the gap were rawed and fastened together by strips of fascia from each edge reinforced by a few catgut stitches. The knee was kept at rest for three weeks with quadriceps massage after ten days. Patient was gradually allowed to bring his knee into full use as a soldier's knee. He was completely cured of all his trouble and was alright for the six months for which he was under my observation.

Remarks.—The history was suggestive of a mild contusion of the semilunar cartilages. There is no doubt that the synovial membrane was injured in the accident, but this intra-articular part was evidently completely recovered from, while the extra-articular lesion was the cause of his later symptom.

CASE 2.—Private X (Rifles) traced his symptoms to a mile race in which he took part more than two years before I saw him. There was no definite history like the first case. The patient complained of a liability while running to a clicking noise accompanied by uneasiness in his left hip which was now more easily fatigued.

Examination.—Briefly there was nothing in his hip-joint, but like the first case the iliotibial band was felt slipping with an abnormal to and fro movement over the great trochanter when the hip was semiflexed and alternately rotated inwards and outwards.

Diagnosis.—The case was diagnosed on the strength of the last case as a rupture of the gluteus maximus insertion into the fascia lata.

Operation.—A tear was found at the time of the operation but it was not so definite as in the first case. It was found that ordinary stitches were not enough to hold back the iliotibial band in rotation of the hip. Deep mattress sutures with No. 4 catgut however succeeded in doing so. Patient was allowed to get up with the same after-treatment. His symptoms were relieved for the period (three months) for which he was under my observation. I am, however, not so very optimistic about the ultimate result in this case.

Commentary.

Fascial attachments and muscular insertions into deep fascia may thus be of considerable surgical importance, on which perhaps some light may be thrown by considering the natural purpose of a partial muscular insertion in fascia. These fascial insertions of muscles are less marked in human beings than in monkeys, in which they may be useful in giving the animal an initial mechanical advantage for a quick start from the stationary position—obviously a more necessary equipment for the monkey in its struggle for existence than for human beings. A taut fascia, so to speak, keeps the car in gear for a ready start and hence the necessity for muscles that are inserted into the fascia. In the second case the patient lost speed on account of the tear noted at the operation; I cannot say if he has recovered any of it since. This case is comparable to the snapping hip (*hanche à ressort*) of some writers. Thomson and Miles (Manual of Surgery) describe this injury thus: "The condition was formerly described as a voluntary dislocation of the hip; it is now believed to be due to a cord-like band of tissue slipping backwards and forwards over the trochanter. The band is usually derived from the fascia lata, sometimes reinforced by the anterior fibres of the gluteus maximus, sometimes by the tensor fasciæ femoris." It is more accurate to describe the injury (for this condition is the result of an injury) as a rupture of the gluteus maximus insertion into the fascia lata. The first type of case, so far as I can make out, has never been recorded.

LEEDS INFIRMARY.—Last year the expenditure was £104,789, being £10,680 less than the average of the last three years, and the accumulated deficit has been reduced to £63,000. Of the 1181 motor accident patients, 544 were admitted; they occupied beds for 6500 days and cost £4265, of which only £243 was repaid. An asthma clinic was opened during the year.

ROYAL PORTSMOUTH HOSPITAL.—There was great pressure of surgical work last year, 2575 operations having been performed. The work of the theatre has nearly reached its limit, but the new theatre, which is approaching completion promises, according to the annual report, to be second to none among the hospitals of the provinces. It is hoped that shortly medical and surgical beds may be separated. The average weekly cost of each in-patient was £2 4*s*. 6*d*.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

AT a meeting of this Section held on March 28th Lieut.-Colonel F. E. FREMANTLE, the President, took the chair, and Dr. WILLIAM FLETCHER opened a discussion on

TYPHUS-LIKE FEVERS OF UNKNOWN ÆTIOLOGY,

with special reference to the Malay States. He remarked that the League of Nations, in their Epidemiological Report for December, had stated that typhus was the least interesting of all the infectious epidemic diseases, implying that everything was known about it and that it did not interest the research student. It was hard to believe that such an opinion could be entertained by anyone who had seriously investigated the many unsolved problems of the disease. He began by describing his own experience of the exanthem which in Malaya was called tropical typhus. Some six years ago he had seen a Sikh woman and her daughter, aged 11; they had been in hospital for about a fortnight and were lying in a drowsy typhoid state. He had examined the blood with his stock culture of *B. proteus* X 19; this strain had been thought at the time to be an ordinary culture of X 19, but was now known as the "K" or Kingsbury strain. The blood of the mother had agglutinated this strain in a dilution of 1 in 3000, and the daughter's blood at 1 in 1600. He had reported, to the great horror of the medical officer of health, that the patients were suffering from typhus fever. The diagnosis had been vehemently questioned, because it had been supposed that there was no typhus in the country, the patients had lived on an isolated farm, they had been well on the way to convalescence after the 17th and 18th days respectively, and the disease had not spread to the other inmates of the rather overcrowded general ward. Other cases of the same kind had subsequently occurred in various parts of the country. The symptoms were those of mild typhus and the rash in Europeans was like the rash of typhus, but in the dark-skinned Asiatics was difficult to detect. The agglutination with the K strain became positive towards the end of the second week of illness, reached its highest titre at the beginning of the fourth week, and then declined. The cases were always sporadic, and had no connexion with one another except where a common source of infection was suggested. The disease never spread in hospital. Body lice were not found, and there was plenty of evidence that the disease was not carried by head lice. It did not occur among town-dwellers, but affected those whose work took them into waste land covered with scrub and long coarse grass.

Serological Distinctions: Classification.

A number of cultures of *B. proteus* X 19 had been found, to the surprise of the workers, to differ antigenically and in their biological reactions from the K strain; moreover, they had not been agglutinated by the blood of these patients. The disease was clearly not typhus, because it did not spread from case to case and because the Weil-Felix reaction was negative with the ordinary strain of X 19. Nevertheless it must be closely related to typhus because of its positive agglutination with a strain of *B. proteus*. Cases had later begun to appear which gave a positive Weil-Felix reaction with normal X 19. Clinically they differed little from the others, but they all occurred in townsfolk. Shopkeepers were so liable to the disease that it had been given the name of tropical shop-typhus, in order to distinguish it from the other form, which was called tropical scrub-typhus.

Scrub-typhus had a patchy distribution and clung to certain estates and pastures; on plantations it was more or less limited to the older parts. The chief sufferers were the coolies who worked in close contact with the palm-trees. When palms were five years old these workmen had to hack off the lower fronds and dead flowers, which seemed to be the source of the infection. The resemblance of scrub-typhus, both in its epidemiology and in its serology, to Japanese river fever (tsutsugamushi disease) made it possible that the vector was a trombicula and that the reservoir of the virus was probably a rat. The ears of rats caught on the estate, where many of the observations were made, usually carried *Trombicula deliensis*.

Tropical shop-typhus was also a sporadic disease which did not spread; although it was not louse-borne its occurrence in towns and its positive Weil-Felix reaction showed that it was more nearly related to typhus exanthematicus than was scrub-typhus. It was probably identical with the endemic typhus of South Australia and of the United States (Brill's disease). There was little evidence to incriminate any particular arthropod.

Typhus-like diseases similar to those of Malaya occurred in many parts of the world. The spotted fever of the Rocky Mountains and the Japanese river fever were closely related to typhus exanthematicus. J. W. D. Megaw had classified all these diseases according to their vectors into the four groups of louse-typhus, mite-typhus, tick-typhus, and typhus-like diseases of which the vector was unknown. The Malayan forms fell into the fourth category. Diseases of this last class occurred all over the warmer parts of the world and, where there was seasonal variation, occurred chiefly during the hotter months. It must not be supposed that they were all different diseases, but they could not all be one disease. At present they fell into the two main groups of urban and rural, but as their vectors were discovered they would probably be transferred one by one into the first three classes of Megaw. If they occurred in England at all, they must be rare and very difficult to diagnose from true exanthematic typhus.

The PRESIDENT pointed out the necessity of facing the fact that the diseases Dr. Fletcher had described did not fit into the recognised text-book knowledge. The old ideas, valuable in their time, were giving place to more human conceptions. He recalled an epidemic in the Boro, in his early days of a disease which had probably been identical with one of the newly discovered syndromes.

Nomenclature.

Dr. E. W. GOODALL, as did nearly all subsequent speakers, repudiated the statement in the League of Nations' report that no one was interested in typhus. He pleaded for nomenclature by prominent symptoms and objected to the terms "scrub-" and "shop-" typhus. If these conditions were not typhus, they should have names describing what they were like. Mild forms of classical typhus occurred both sporadically and in epidemics. He suggested for all these typhus-like diseases the name "typhus minor." The Marseilles disease, however, had been shown by workers on the spot not to be typhus, at least clinically, nor was the Japanese river fever typhus, judging from Dr. R. G. Archibald's account of it (The Practice of Medicine in the Tropics).

Dr. Fletcher had distinguished his tropical forms from classical typhus by their mildness, non-infectivity, different seasonal incidence, different social incidence, their propagation by some means other than lice, and their serological reactions. Dr. Goodall adduced variola minor as an instance of a mild form of a well-known disease; moreover, the epidemic typhus of Australia, one of the diseases which Dr. Fletcher had enumerated, had recently shown a 10 per cent. death-rate, one quite up to the standard of true typhus. True typhus had occurred in this country without spread over and over again. Scarlatina

was most prevalent in this country in the early winter and in the United States in the early spring, but the disease was the same in both countries. Typhus, according to Crichton, had occurred among the higher as well as the lower classes, and Dr. Goodall had seen a small epidemic among well-to-do persons in Stepney whose house had been exceptionally clean. He had observed cases in which he doubted very much whether the disease had been conveyed by insects at all. Finally, serological anomalies might occur in homologous diseases.

The Causal Organism.

Sir ANDREW BALFOUR recalled a case occurring in a British soldier in Khartoum, of what had possibly been one of the forms described by Dr. Fletcher; it had been different from typhus but had answered very closely to the description given by A. Conor and A. Bruch of what was now supposed to be the same as the Mediterranean *fièvre exanthématique*. It had been mild and had had the peculiar clinical feature that the rash had occurred on the palms and soles as well as, slightly, on the face. The best example of a disease carried by a number of vectors was the tularæmia of rabbits, which might be conveyed by ticks, fleas, and other arthropodes and which had been found in Japan, Soviet Russia, and other places besides America. Its wider incidence, like that of typhus, had remained unrecognised until it had been pointed out by an especially shrewd observer. While agreeing with Dr. Goodall that topographical nomenclature might be misleading, Sir Andrew held that scrub-fever and shop-fever were useful terms until more was known about these forms. The chief difficulty was lack of knowledge of the ætiology. He had himself always been doubtful whether rickettsia was the active organism of typhus. The current number of the *Marseilles Médicale* had contained a paper on a case of Mediterranean typhus where dog ticks had been suspected as the vector. He welcomed the investigations which Dr. A. Anigstein, of Warsaw, was making in Malaya for the Colonial Office.

Dr. J. A. ARKWRIGHT testified to the value of the study of the rare forms of typhus for the elucidation of the whole question. Recent workers in the United States had found rickettsia to be commonly present in guinea-pigs and rats inoculated with European and Mexican typhus and the sporadic typhus of the South-Eastern States; the organism had been successfully transplanted into *Pediculus corporis*. This result would suggest that rickettsia was really the ætiological organism of typhus. Cross-immunity experiments in rats seemed to have established the identity of the sporadic typhus of the United States with European typhus, and the blood of sporadic cases had been passed through lice. If *Pediculus capitis* could convey typhus, the whole course of transmission would be different. The apparent absence of lice on a patient was not conclusive, as a single louse could infect.

Prof. J. C. G. LEDINGHAM saw in the results with the Kingsbury strain a promise of further enlightenment on the bacteriology of the new forms. Dr. Goodall's objection to the nomenclature did not seem to him important. The observation of small clinical differences would not help much, and progress must be along bacteriological lines. When progress had been made, correct nomenclature would follow.

Serological Tests.

Dr. A. FELIX described Dr. Fletcher's work as one of the most important advances made in the study of typhus during recent years. He had fully confirmed Dr. Fletcher's results by serological tests. The K strain undoubtedly played the same rôle in the rural typhus as *B. proteus* X 19 played in the urban and classical forms. Two strains of *B. proteus* had been used from the earliest days of the serological diagnosis of typhus, and antigenic analysis had shown that the relationship of the K strain to the known types was similar to that which existed between the two early types. Failure to obtain cross-immunity between a typhus-like disease and true typhus might be due to antigenic factors known in other bacterial species, and could not by itself support a distinction.

Sir WILLIAM HAMER said that in epidemiology the question always arose of what the orthodox disease was, and epidemic diseases unfortunately did not behave in a very precise and orthodox manner. He had been struck years ago by the difficulty of distinguishing in some cases between diphtheria and scarlet fever, and had learnt from Dr. Goodall that there was no such thing even as an orthodox measles rash. It was necessary to take account of all the bacteriological and clinical evidence, the various facts of meteorology, and the incidence in scrub or shop, and then to return to the epidemiology of the disease. Even before the middle of the last century writers had had very definite ideas about the epidemiology of these comatose fevers, and Sydenham had grouped them on either side of the big influenzas. Typhus fever, whether in Dr. Fletcher's cases, in those studied by Dr. Goodall in Poland, or in those observed after the big influenza epidemics of the 'nineties, had certain epidemiological characters that were world-wide and had extended over centuries of time. These characters ought to be weighed together with all the other evidence.

Dr. J. D. ROLLESTON referred to the valuable work done in Germany, which had established that typhus was really a disease of the small arteries, and asked Dr. Fletcher whether the typhus nodules were found in his cases. He criticised Dr. Fletcher's suggestion that exanthematic typhus might be a comparatively modern disease. Typhus was a disease of human misery, associated with war and famine, and he thought it very probable that the Athenian pestilence described by Thucydides had been typhus. He asked whether any work had been done on prophylaxis with the serum of convalescents. A paper had recently been published by Pecari which probably threw light on the Italian *febbre eruttiva;* the author had said that it existed in Rome, and it therefore appeared to be an urban form of the disease.

Reply.

Dr. FLETCHER, in reply, said that Brill had decided shortly before his death that his disease (endemic typhus of America) was not typhus. Hundreds of cases of the kind he had described occurred without spread in different parts of the world and epidemiologically were not typhus. Moreover, the public would not have them called typhus. Dr. Goodall had said that the Mediterranean disease was not typhus, but there was a disease at Toulon which occurred on the ships and in the streets, which gave a positive Weil-Felix reaction, and which was different from the Marseilles type. He had classed the particular Marseilles epidemic he had referred to with the Japanese river fever because the symptoms were very much the same and there were similar changes in the small blood-vessels and agglutination, though only in a low degree, with the K strain. Typhus inoculation in guinea-pigs conferred slight immunity against Rocky Mountain fever, and the positive Weil-Felix reaction in Rocky Mountain fever had justified Megaw in classifying it with typhus. The names he gave to these diseases were simply provisional. In New York and Australia Brill's disease was not notifiable and was not treated as typhus. Dr. Anigstein would probably publish his work shortly. Cross-immunity did not mean that the virus causing two diseases was necessarily the same; he instanced variola and vaccinia. He did not think that head lice were concerned, because their presence or absence seemed to make no difference to the spread. He agreed that the epidemiological aspect was the most important. He had not gathered that the disease described by Pecari had actually occurred in a town. No attempt had yet been made to immunise with convalescent serum. Such histological material as he had seen resembled that of typhus.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

At the meeting of this Society on March 28th, Dr. FRANCIS J. H. COUTTS, the President, being in the chair, the subject of discussion was

VULVO-VAGINITIS IN CHILDREN.

Dr. D. KATHLEEN BROWN, in opening, based her remarks on the experiences she had gained at the Guy's Hospital V.D. Clinic and the Children's Medical Home, Waddon. In the former, between the years 1925 and 1929, the number of new cases of gonococcal vaginitis was 118. Of these, 46 were discharged cured, 16 were transferred to other hospitals or for further tests, 8 ceased to attend, and 48 were still attending. The 46 patients who remained under observation to the completion of the treatment, including tests for cure, attended for an average period of 67 weeks, the longest time being 204 weeks. At the Children's Home the duration of the disease varied from a few weeks to two years. In 21 months at this establishment 84 patients were admitted with gonorrhœa, and 1 with syphilis; 55 were discharged after treatment, 24 were still resident there. The incidence of gonorrhœa in children for the five years at the Guy's clinic was 12·5 per cent. of all cases of female gonorrhœa. With regard to non-gonorrhœal vaginitis, 174 children attended for examination because of discharge from or soreness of the vulva, or because they were contacts with infected parents or sisters. In most of these cases the infection was due to the streptococcus, staphylococcus, *B. coli*, or the Klebs-Löffler bacillus. Dirt and thread-worms were also a cause of vulvitis; and in some patients there were excoriations and impetigo. The ages of the cases varied from 10 months to 12 years, the average being 4·6 years. At Guy's Hospital clinic there were no cases between the ages of 12 and 15 years. Relapses seemed to occur most often in hot weather.

Modes of Infection.—In a large proportion of the cases the source of infection could not be traced, but accidental transmission by the use of infected towels, sponges, sheets, lavatory seats appeared to be most common. A large number of the infected children had parents with gonorrhœa. When epidemics occurred in institutions the spread of the disease was rapid, probably by the use of infected bed-pans or lavatories, towels, and sponges; possibly by clinical thermometers or syringes. In this country assault was not a common cause of infection. At Guy's the sources of infection were as follows: of unknown or doubtful origin, 67 per cent.; ward infection, 15 per cent.; parents who were gonococcus-positive, 13 per cent.; assault, 4 per cent. Parents and sisters of infected children should always be examined where possible. In the 84 admissions to the Children's Home already mentioned, the accidental or unknown origins were 58 per cent., infected from parents 31 per cent., assault or probable assault 11 per cent. Of 70 cases at the Guy's clinic 61 per cent. had gonococci in the vaginal smear at the first attendance. Of the 39 per cent. with negative reports at first, 24 became positive at a later stage, usually in a few days, though in one case the positive result was deferred for nine months. This emphasised the need for repeated tests before excluding gonorrhœa. Vaginal cultures gave a considerably lower percentage of positive results than the smears. In acute cases the gonococcus was always demonstrable in both vagina and urethra.

The points in the *diagnosis* were excoriation of the groins and of the labia majora, with adherent crusts of dried pus, an acutely inflamed vulva bathed with pus, inflammation and œdema of the urethral orifice and hymen, with thick, creamy pus oozing from the vagina with the child's expulsive effort. The frequent absence of actual symptoms might account for the delay often noted in bringing these children for treatment; and yet it was quite usual for the affected child to scream when micturating. Dr. Brown expressed regret that many practitioners still failed to appreciate the danger, and did not fully investigate cases of discharge in children. The acute symptoms cleared up with treatment, but the length of time before negative reports were obtained varied a good deal with different cases. In the two series dealt with the minimum period was two weeks, the maximum 15 weeks. One of the features of the disease was the tendency to relapse; 54 per cent. of the cases mentioned here relapsed.

Complications were less frequent in children than in women. The Guy's cases showed urethritis, 12·2 per cent.; proctitis, 4·6 per cent.; gonococcal infection of the eye, 3 per cent.; pelvic peritonitis, 1·5 per cent.; arthritis, 1·5 per cent. During treatment the general health was maintained by tonics or cod-liver oil, and home treatment was carried out by Sitz baths. Three forms of treatment were used: (1) spuman, either alone or with 10 per cent. protargol in glycerin; (2) mercurochrome 10 per cent., emulsion of sulphur, or acriflavine 2 per cent.; (3) irrigations with potassium permanganate 1 in 10,000, or with other solutions.

Experiences at Great Ormond-street.

Dr. B. B. SHARP dealt with his experiences at the clinic of the Hospital for Sick Children, Great Ormond-street, under Dr. D. Nabarro from 1923 to 1929, and with the cases seen in the department from 1917 to 1929. Cases of inflammation of, or discharge from, the vulva investigated amounted to 1219 and of these 249 had definite gonorrhœa; 949 were not of that nature, 21 were returned as doubtful. Often evidence could be obtained that a parent passed the disease on to the child. He agreed that acute gonorrhœal vulvo-vaginitis could be clinically diagnosed, almost with certainty in every case. Usually the organisms could be seen to be intracellular, though in the very early stages they might be extracellular. In older patients difficulties of diagnosis often arose. Bacteriological tests must be continued over a considerable time before the patient could be regarded as cured. Many other organisms could mimic the gonococcus in smears, but they varied in size, and the skilled pathologist could differentiate them. To be able to grow the gonococcus proved the diagnosis, but that was not easy in the primary culture. He had found blood serum agar to be the best medium. An analysis of cases showed the age-incidence to be between 2 and 5 years; after 5 the incidence declined rapidly. In adult women the highest incidence of the disease was in the summer months, perhaps because of the increased opportunities of infection in the warm evenings. He agreed with Dr. Brown that in this country criminal assault as a cause was very rare. Prophylaxis depended on a proper education of infected adults, who should be warned of their liability to infect female children. Any of the contiguous orifices could be infected. Since March, 1926, he had carried out rectal tests as a matter of routine, at an earlier stage than urethral tests. As to treatment, for the first week he accustomed the child to one daily irrigation, afterwards using a douche of permanganate 1 in 4000, or dilute milton; the vagina was then packed with some antiseptic plus glycerin, his preference being protargol. Any rectal infection he treated with a 2 per cent. aqueous solution of protargol. None of his rectal infections had persisted. He did not consider a case cured until the smears continued to be negative three months after the child's return home. Cases of non-gonorrhœal vulvo-vaginitis were very numerous, and he only dealt with them in a general way. The age-incidence in these was older than in the gonoccocal—namely, 5 to 10 years. It was difficult to find any seasonal incidence; these cases were often very chronic and there was a great liability to recurrence. If, as some believed, this form was

more frequent in July, August, and September, it was probably because of the scanty underclothing worn, and the more frequent sitting on dirty doorsteps. The wearing of tight combinations might lead to irritation sufficient to start the habit of masturbation; there might be eczema, glycosuria, hyperacidity of urine, or accumulation of smegma. Poor health, especially in the highly strung child, was a contributory factor. In girls approaching puberty pure diphtheroid infections occurred.

Dr. DAVID NABARRO said he noted that Dr. Brown had dealt with several female children under a year old. From 1917 onwards if he, the speaker, had a case under 2 years of age sent to him, he took it as presumptive evidence that it was not gonorrhœal. But when, at a later date, cultures were done as a routine, gonorrhœal cases proved to be more numerous than he had thought them to be. As to involvement of the eye in the disease, Dr. P. Flemming had demonstrated that the secretions of the eye, at least in the adult, were decidedly bactericidal, the material being lysozyme. It might be that this was not present in the eyes of infants. There was a question whether there might be different strains of gonococci, as there were of streptococci. That might explain why one did not get positive fixation tests unless a polyvalent antigen was used. At his hospital they had not had very successful results from vaccine treatments, several kinds of which had been tried. Prof. Ronenger favoured intramuscular injections of sterilised milk, three or four injections materially shortening the period of treatment. In none of the cases with which his department was concerned were pneumococci present. More hospital beds for these cases were needed and would result in a definite shortening of the treatment. Four cots were set apart for them at Great Ormond-street, and they were always occupied.

Dr. T. ANWYL DAVIES said he had always found that if the accompanying proctitis was left alone it cleared up. His most satisfactory results had been in cases in which glycerin entered into the treatment. He had found more positive results from cultures than from smears, even among children. In 44 per cent. of his cases the infection was found to have been transmitted from the mother.

The Technique of Nursing.

Colonel L. W. HARRISON said he would like to enter a plea for the careful training of nurses in charge of children in a ritual designed to prevent infection being passed from one child to another. In some outbreaks of this disease into which he had made inquiries it seemed to him that nurses had not realised how easy it is for infection to be passed from one patient to another on such articles as thermometers, towels, chair-seats, and so forth. Every female child ought to be regarded as a potential danger to its neighbours, notwithstanding negative swabs. He would like to make a suggestion with regard to treatment. In the douching which was usually carried out in these cases, it seemed to him that often enough the lotion did not penetrate to the furthest recesses of the vaginal canal, merely surging in the lower reaches. He would suggest that a more efficient douching would be carried out by means of a back-flow instrument passed to the vault of the vagina. He was not very unhappy to find that the painting with mercurochrome, which he had suggested some years ago, had not altogether fulfilled the hopes he had entertained, but he was glad to find that the treatment with glycerin applications, which he advocated a number of years ago for gonorrhœa in the adult, had given such good results in children.

Gold Compounds.—In Dr. W. N. Goldsmith's remarks reported last week (p. 692) after triphal *read* aurophos and lopion.

ST. JOHN'S EAR HOSPITAL, MANCHESTER.—Last year there were 2366 new patients, and 406 operations. There is a long waiting-list.

Reviews and Notices of Books.

SURGERY OF THE LUNG AND PLEURA.

By H. MORRISTON DAVIES, M.D., M.Ch., F.R.C.S., Medical Superintendent, Vale of Clwyd Sanatorium. London: Oxford University Press, Humphrey Milford. 1930. Pp. 335. 25*s*.

THIS work, which is published as a volume for a monograph series entitled "Regional Surgery" under the general editorship of Mr. A. P. Bertwistle, is essentially a revised edition brought up to date of an excellent book with the same title published in 1919, and has remained an authoritative English text-book on the subject. Intrathoracic surgery has progressed during the last ten years in a way that may be compared with the advances in abdominal surgery a generation ago. It is possible safely to open the thorax and operate on a growth or suppurative condition in a patient for whom nothing could have been done a few years ago. Even in the treatment of empyema surgical procedure has undergone a complete revolution, and the mortality, under modern surgical technique, has been considerably lessened. In this book the author discusses the dangers of an open pneumothorax; he explains why aspiration is safer than early operation in many types of empyema, and when operation should be undertaken. It is possible to operate too late as well as too early. In dealing with abscess of the lung the danger of rupture into the pleural cavity is emphasised; artificial pneumothorax is rarely justified. The operation of rib resection and drainage is described. Under modern technique the results of this procedure are excellent. The dangers of lobectomy have also been greatly diminished; in recent years it has become possible to remove a lobe of a lung containing a malignant tumour. Lobectomy may in time become the operation of choice, supplanting thoracoplasty in such conditions as bronchiectasis. In pulmonary tuberculosis the advantage of resting the lung has long been appreciated. The author describes four methods of collapsing the diseased lung: (1) Artificial pneumothorax—the method of choice, but its success is limited by the presence and extent of intrapleural adhesions; (2) thoracoplasty; (3) extrapleural pneumolysis; (4) phrenic evulsion. These and other operations are described in detail, as are also the methods of producing regional anæsthesia. The book will be read with the greatest interest by the physician as well as the surgeon interested in intrathoracic disease, for, as the author points out, medical and surgical treatment must go hand in hand and cannot be considered separate entities. The author is to be congratulated on this work. The arguments are clearly expressed and well arranged and a very complete list of references is appended.

A SHORTER SURGERY.

Second edition. By R. J. MCNEILL LOVE, M.B., M.S., F.R.C.S., Assistant Surgeon, Metropolitan Hospital. London: H. K. Lewis and Co., Ltd., 1930. Pp. 371. 16*s*.

Mr. Love has here reduced surgery to its simplest terms. He has omitted controversial matter and irrelevant hypotheses, and now, by adding chapters on specific diseases, fractures, and dislocations, he has filled a few gaps noticeable in the first edition of this useful book. Text-books providing short cuts to the learning of surgery frequently defeat their object by excessive condensation. They become little more than lists which are so tedious as to make little impression upon the mind of the reader. This book is not at all dull and the student who has read a larger text-book or assiduously attended classes of clinical instruction has now at his disposal a small volume which will remind him of all the salient facts which he should have remembered from his former studies. It is an achievement to have compressed in such a small compass a readable account of modern surgery.

THE DRAMATIC IN SURGERY.

By GORDON GORDON-TAYLOR, O.B.E., M.A., F.R.C.S., Surgeon to the Middlesex Hospital. Bristol: John Wright and Sons, Ltd. 1930. Pp. 88. 12*s*. 6*d*.

THIS attractive little book will afford an hour or two's entertainment to the practising surgeon, with some profit. It comprises the substance of an address delivered before the Manchester Surgical Society. Some almost incredible exploits by the author and other surgeons are recounted, which will fill the reader with astonishment, but their memory will encourage him in future times of difficulty and doubt. One lesson stands out emphatically—that success in cancer surgery comes only to him who dares. Many incidents are related which are dramatic or curious or even humorous mainly from the circumstances or surroundings in which they have occurred, as for example the rupture of a hydrocele when its possessor, a Scotchman, stooped to pick up a sixpence lying in the Charing Cross-road. The book must be read to be appreciated. It will be laid down with a feeling of regret that a gifted author of such varied and ripe experience does not more often contribute to surgical literature. The illustrations are many and beautifully executed.

THE BLOOD PICTURE AND ITS CLINICAL SIGNIFICANCE.

Seventh and eighth revised editions. By Prof. Dr. VICTOR SCHILLING, Physician-in-Chief, the First Medical University Clinic, Charité, Berlin. Translated and edited by R. B. H. GRADWOHL, M.D., Director of the Pasteur Institute of St. Louis. London: Henry Kimpton. 1929. Pp. 408. 42*s*.

THIS book was first published in Germany in 1912. Its eighth edition, which has been translated, is not a very impressive production. The main theme deals with the author's modification of the Arneth system in determining the response to infection, but it is noteworthy that the two writers appear to be on terms of lively disagreement. There are four parts, the first dealing with technique. A particular method of making blood smears is given, with many methods of staining, some rather vaguely described. A thick drop is always made to show the degree of polychromasia, the proportion of eosinophils and the presence of parasites. The hæmoglobin must be estimated, but the total red and white counts are only done when it looks necessary; otherwise the leucocytes are estimated from the smear. The usual special examinations —e.g., fragility, platelets, &c.—are described, with the additions of the sedimentation-rate and guttadiaphot. The latter device does not sound attractive; it is admitted that its use is still mainly in the experimental stage, and the insertion of a description of it in this book savours of advertisement. The notes on blood transfusion are poor—for example, an enema of blood is suggested for small children.

Part II., called the theory, morphology, and division of the blood picture, first describes the red cells and the anæmias which are classified according to the degree of "shift to the left," normoblastic, megaloblastic, and so forth, either purely regenerative —i.e., with normal young cells—or with some degenerative tendency as well. The classification is not always very fortunate—e.g., in severe aplastic anæmia with little or no shift. The blood-platelets are discussed with the red cells from which the author considers they are derived. A longer section is devoted to the leucocytes, the determination of the response to infection being the main raison d'être of the book. The "hæmogram," or blood picture, includes normally an estimation or count of the totai leucocytes, an examination of the thick drop, and the differential count. The latter is of the usual type, apart from the neutrophils which are divided into four groups: (1) segmented cells, (2) "stabs," (3) juvenile cells, (4) myelocytes. The "stabs" or "staff" cells have nuclei in the form of bent rods and serve as an index of the degenerative tendency present, while the appearance of juvenile forms or of myelocytes shows the degree of regeneration activity. Even if one assumes that the different types can be accurately differentiated, it is clear that a very high standard of technique and judgment would be necessary in any establishment where large numbers of routine blood counts are made. The importance of the eosinophils in infection is very rightly stressed, and the interdependence between the different types of leucocytes is suggested. The discussion on the leukæmias is comparatively short, and it is curious that the author should stress the use of the oxydase test, since he admits that it may be negative in the myeloblast. The blood in the child is discussed in a separate section.

Part III., on the clinical use of the blood picture, includes the changes in specific diseases, and Part IV. is devoted to 100 examples of actual cases. The cases of tuberculosis ought best to show the use of the hæmogram, but unfortunately the prognosis is not always confirmed by any subsequent history.

In general the book is far from convincing, and is written with little critical sense. The translation is too liberal, the terminology being flowery and the meaning often obscure. Four well-executed coloured plates are included and the index is very full; a large bibliography refers almost exclusively to German publications.

BIOLOGIE UND PATHOLOGIE DES WEIBES.

Ein Handbuch der Frauenheilkunde und Geburtshilfe. Lieferung 46, VIII. Band, 3 Teil. *Die Beeinflussung der Geburt durch den spontanen vorzeitigen Blasensprung*. Von Priv.-Doz. Dr. E. FREY (Zurich). Berlin: Urban and Schwarzenberg. 1929. Pp. 1903–2072. With 6 coloured plates. M.10.

IN this subsection of Halban and Seitz's well-known work Dr. E. Frey, of Zurich, deals very comprehensively with the subject of premature rupture of the membranes, discussing its causation and influence on labour and the puerperium in normal and in contracted pelves. For purposes of comparison standard tables have been constructed from records of 200 cases of normal labour and the puerperium in primiparæ and a like number in multiparæ. Such a detailed study has been rendered possible by the fact that in Zurich "pain tables," showing the number and duration of labour pains during each half-hour of labour, have been carefully kept since 1926. These "pain tables" show the number of pains necessary to complete the first, second, and third stages, the duration of the various stages, the amount of blood lost, and so forth, and a comparison is made with the results in 400 cases in which the membranes ruptured prematurely—that is, before the onset of pains. As to management, the author advocates hospital care for all such cases and an expectant attitude with avoidance of vaginal examination. Hydrostatic bags find no favour and induction of labour by ecbolics or otherwise in the stage between rupture of the membranes and the onset of pains is deprecated. Judgment is reserved on manual dilatation when there are signs of fœtal distress. Although reference is made to the unfavourable influence on the fœtal mortality-rate it is disappointing to find no reference to the work of Warnekros and others on the frequency of placental infection when the membranes have ruptured prematurely, and to the consequent occurrence of maternal blood-stream infections, nor is there any note of British and American work on congenital infection of the fœtal lungs.

Prof. W. H. Taliaferro's "Immunology of Parasitic Infections," reviewed in our last issue, is published in this country by Messrs. John Bale, Sons and Danielsson, Ltd., price 26*s*. post free.

THE LANCET.

LONDON: SATURDAY, APRIL 5, 1930.

THE PHARMACIST AND THE REPORT.

THE publication of the report of the Departmental Committee on the Poisons and Pharmacy Acts, of which a general survey was made in our issue of March 22nd (p. 633), had been awaited by pharmacists with impatience commingled with a certain amount of anxiety. This anxiety has, for the most part, been allayed by the presentation of the report, but there can be no doubt that pharmacists as a body would prefer the status quo to be preserved. In a few years from now the Pharmaceutical Society of Great Britain will be celebrating its centenary. It was in the early days of Queen VICTORIA'S reign that a number of chemists and druggists met together at an hostelry in the Strand and resolved, on the motion of WILLIAM ALLEN, F.R.S., to form an Association for the purpose of protecting their permanent interests and—as it was quaintly put—of increasing their respectability. Less than two years from its foundation the Pharmaceutical Society was granted a charter of incorporation; quick work indeed, but it is to be recalled that the same WILLIAM ALLEN was instrumental in satisfying the Duke of KENT'S creditors, and so contriving that the future sovereign should be born in the country over which she was destined to rule. Even so all was not plain sailing, and in our own columns appeared a warning of the supposed intention of the Society to sue for a charter and an advice to the Apothecaries Society to apply to the Privy Council before it was too late. The misunderstandings of ten decades back have long since been cleared away, and the Society has performed its duties honourably to the good of all concerned. What, then, is wrong with existing conditions, and why was the inquiry started? No charge of inefficiency had been laid against the Society, and there was no suggestion that the Pharmacy Acts were being administered improperly. Current stories of dope fiends and cocaine traffickers may have impressed the Government of the time, but there was nothing in the terms of reference to the Committee which had any bearing on the illicit traffic in narcotic substances, and there is certainly nothing in their report which would embarrass either the west-end charlatan who deals in "snow," or the Chinese keeper of an opium den. The cause of the inquiry remains obscure to the pharmacist. For 90 years the Pharmaceutical Society has been a voluntary body, and at the present time, to quote the figures in the report, there are 12,500 members, while 20,000 are eligible for membership. No pressure, except by way of gentle suasion, is brought to bear on registered chemists to join the Society, and the only means by which a chemist can show that he is a member is by displaying his certificate in his shop or by using the letters "M.P.S." after his name, if he so chooses. It is a remarkable testimony to the camaraderie of the pharmaceutical profession and to the confidence it has in the Society that such a large proportion of those eligible for membership should pay a guinea and a half a year, when there is nothing stronger than a sense of loyalty to impel them to do it.

The Departmental Committee proposes to change all this; instead of volunteers we are to have conscripts and there is to be no loophole for the conscientious objector. From this principle there will be many dissentients, and they will be derived not only from the 7500 who at present benefit from the work of the Society without contributing to it, but also from the ranks of those who have supported the parent body because they considered it their duty to do so. In addition to compulsory membership of the Society, it is proposed to compel every person who owns a chemist's shop to pay a registration fee in respect of it. The maximum fee for membership is raised to £2, and the maximum fee for registration is £3. Thus, supposing the fees in each case were fixed at the highest figures, chemists owning single shops would be required to pay £5 a year, which, in the case of those chemists who do not now subscribe to the Society, would be a new charge; in the case of those who are members of the Society there would be a compulsory charge of £3 8*s*. 6*d*. in excess of the amount which they now pay voluntarily. A trifling calculation based on the figures given in the report shows that the Society's revenue from membership and registration fees would be £70,000, which, assuming that the present revenue from members' subscriptions is £21,000, would mean an addition of nearly £50,000 to its annual income. If such a proposal appears fantastic, there are two factors which must enter into the calculations. In the first place the amounts of the fees for membership and for registration are to be prescribed by by-laws of the Society; the maximum fees only are laid down in the recommendations of the Committee, and there is nothing to prevent the members of the Society, who elect the governing body, from so limiting the fees that the income from the two sources will not be greater than the present revenue from members' subscriptions. Thus it would be quite possible, though obviously not practicable, for the membership fee to be reduced to 15*s*. a year and the registration fee to be fixed at 7*s*. 6*d*., without loss of income; in such a case the present members would be in pocket to the extent of 9*s*. a year. In the event of the Bill which the Committee have drafted becoming law in its present form, the Society could be depended upon not to abuse the extraordinarily generous openings which the Committee propose to give them. The other factor is the increased cost entailed in the administration of the proposed new Act. While the onus of prosecuting offenders would be removed from the Society except as a "common informer," it would be charged with the duty of inspecting registered premises, and in proposing a registration fee the Committee had in mind the cost of this inspection. Further, it is clear that the addition of 7500 registered chemists to the membership list would entail a heavy cost, for clerical work and circularising alone would mean a substantial additional charge. The question of increased revenue is bound to be attacked when the Bill is debated in Parliament, for it will be argued by various trading bodies, which are jealous of the chemists' so-called privileges, that the revenue-raising powers with which it is proposed to endow the Society are too great. Were not the integrity of the Society itself a sufficient safeguard, it can hardly be seriously imagined that the members who, through

their elected representatives, make the by-laws, would consent to the imposition on themselves of heavy burdens, even though they feel, as they could feel, that the funds of the Society would be used for the advancement of pharmacy on a scale even more generous than in the past.

Turning to the administration of the law affecting the sale of poisons, the pharmacist will note that, whereas in the past the Society has been its own policeman, it is now proposed that the functions of prosecuting offenders should be handed over to the proper authority for dealing with infringements of the law. Such a proposal was inevitable as soon as an inquiry started, for although the Society has performed the functions of prosecution, judge, and jury for all these years with vigilance and justice, the system is out of tune with modern methods. Moreover, under existing conditions, the penalty for the offence in the majority of cases is an unalterable fine, and the offender is able to pay the penalty without incurring the more effective correction provided by publicity. The difference between the existing state and that proposed is the difference between a caning at home and sitting in the stocks, and while offenders would prefer to receive a demand by post for £5 rather than a summons from the hand of a policeman, it is frankly impossible to raise any logical objection to the proposed change. Some of the older members of the Pharmaceutical Society may regret the suggested intrusion of representatives of the Government into the domestic circle of the elected council. It is true that the Society's council and that august body, the Privy Council, have rubbed shoulders from the very beginning, but one may be friendly with a man without asking him home to dinner. The proposal, however, is in keeping with modern developments, and as it is impossible by any known method for a minority to outvote a majority, it is difficult to foresee that the presence of three nominees of the Privy Council will have any baneful influence on the 21 councillors elected by the members of the Pharmaceutical Society. In quite a different category is the contemplated constitution of the "Poisons Board," which is something entirely new in pharmacy legislation. It is to consist of 14 or more members, of whom only five are to be appointed by the Society, and its duties will include the drafting of two lists of poisons; the sale of those in the first list will be restricted to registered chemists, but those in the second list may be sold not only by chemists, but by any person licensed for that purpose by a local authority. Chemists will claim a larger representation on this Board, notwithstanding that the nominees of the Pharmaceutical Society, together with those of medical bodies, will have a majority of two over the other members, unless the Home Secretary exercises the privilege of appointing four additional members. Hitherto the initiative in deciding what is a poison within the meaning of the Acts has been vested in the Society, and the change projected—namely, to give them only five-fourteenths of a voice, is so fundamental that it cannot go unchallenged. That, however, is an almost trivial matter compared with the encouragement which the recommendations, and Clause 16 of the Bill itself, holds out to potential vendors of poisonous preparations used for sanitary, industrial, horticultural, or agricultural purposes, or as sheep dips or vermin killers. As Mr. GAMBLE, whose association with a firm bearing the names of two of the founders of the Pharmaceutical Society is not without interest, says in his Minority Report: "any person will be able still more freely to purchase sufficient arsenical weed-killer to exterminate a village" if Clause 16 is enacted. To us it appears inconceivable that it will become law in the form laid down in the Draft Bill. Already more than ample provision for the sale of industrial and agricultural poisons is available under an existing law, and it would be an act of folly to compel local authorities to grant licences for the sale of such poisons to all applicants, excepting imbeciles or criminals. The shops of trained and educated chemists are to be subject to a regular system of inspection, one of the objects of which is to ensure that poisons are properly "stored." Is it not far more important in the interests of public safety that purchasers of sufficient poison "to exterminate a village" should be required by law to store their purchases with extreme care, and to allow an inspection of the premises in which the poisons are stored, whether in an outhouse or in the larder?

MALARIA CONTROL IN INDIA.

THERE is a tendency to associate roving commissions with pleasant little excursions under the most comfortable conditions at the right time of year, punctuated at convenient intervals with complimentary dinners. But that this is not always a true picture is shown in an account of an Indian tour made by the Malaria Commission of the League of Nations last October, in the Singhbhum district of Bengal; the story is told by Lieut.-Colonel R. KNOWLES, the Editor of the *Indian Medical Gazette*, who accompanied the Commission, in the January issue of the journal. The Commission started work at the height of the malaria season, and their tour was evidently a very strenuous one. There were representatives from the United States of America, France, Spain, Holland, and Roumania. The members adopted a common-sense working kit; a photograph shows them all dressed in shorts, with open-necked shirts, no coats, and of course the universal solar topi for head covering. Starting from Calcutta they were taken, in a special train as headquarters, through some of the most malarious regions in India, varying between the rice fields which are so characteristic of Bengal, and picturesque hill and forest scenery. Close to Calcutta they were shown numbers of good-class Bengali houses lying deserted, the causes of abandonment, apart from the natural drift towards the city, being largely malaria and kala-azar. Graphic accounts are given of the wretched condition of the inhabitants of small villages in the worst-infected areas, and of the sufferings of the engineering staff at the time of the construction of the railway, due to malignant malaria and blackwater fever, but it is admitted that in most of these rural areas control on anything like a wholesale scale would be out of the question on the score of expense. One site fixed on for an important railway station had to be abandoned. Infection of running crews in the mining district of Noamundi is avoided by keeping the trains up at the mine heads in protected areas until they can get a clear run through by day.

Colonel KNOWLES's paper deals mainly with control measures at the Noamundi Mine, and, by contrast, at Dangoaposi railway station, through which passes an enormous amount of traffic connected with the mining area. The ground in the Noamundi region consists almost entirely of pure iron ore, which is worked from open quarries in the hillside. The chief source of malaria lay in innumerable seepages, and the bed of the river which they fed. This boulder-strewn stream

has been drained throughout the entire area, and every one of the seepages subsoiled—i.e., channels five feet deep and three feet wide are constructed, filled with boulders and covered with graded stones and earth. Neighbouring trees are dug out, and in that rocky ground it was necessary to use dynamite freely. Protective masonry walls were also built, when necessary, and everywhere seepage water has been led underground and delivered into the main stream through protected outlets. In short the entire hillside has been drained dry of water, thus constituting (with the addition of oiling where necessary, and the screening of all residential bungalows) the malariologist's ideal of a malaria-free enclave within a malaria-ridden district. A diligent morning's search for mosquitoes by one of the Commission yielded only a single chironomid. It is stated that Noamundi Mine is now free both from larval and adult anophelines, and that the only cases which occur are relapses. These measures have, of course, been immensely expensive, and could only have been carried out where wealthy bodies such as the large steel and iron companies were concerned. The expense incurred must, however, have been repaid over and over again in the diminution of the sick-rate, which might otherwise well have rendered work impossible, as in the early stages of construction of the Panama Canal. Just outside the enclave is a village of aboriginals, where anophelines still breed freely, and there is an intense malaria incidence. The problems involved in mosquito prevention in the mine area are so largely of an engineering nature that the work has been put in charge of an engineering officer. He has unlimited labour at his command, and as much dynamite as he requires.

Malaria at Dangoaposi station is a different problem altogether. There, as Colonel KNOWLES says, it is man-made, as in so many other cases in India. The main trouble was a lengthy storm water channel, which was badly constructed, and an incessant source of mosquito breeding, and numerous borrow-pits by the side of the line. Malaria was so prevalent in 1925 that the incidence of attacks amongst the running employees in September was 287 per cent. for that month, which meant that each employee had approximately three attacks. Engines lay idle, and the mineral traffic was almost at a standstill. Control was commenced in November, 1925. Only two main measures were possible—the filling in of swamps and borrow-pits and the creation of proper storm water channels, with regular oiling. These procedures have been very successful, and Dangoaposi is now said to present a malaria control almost as perfect as Noamundi, at the comparatively slight cost of six rupees per head per annum of the population. Mention is made of a very remarkable phenomenon in this neighbourhood: a pool formed by an old manganese quarry, the water of which is absolutely inhibitory to the breeding of mosquito larvæ. Not only do mosquitoes not breed in the pool itself, but the water when turned into an adjoining stream apparently sterilises it of larvæ, while experiments carried out with the same water in shallow pools have shown that it retains its larvacidal properties for three weeks. The water has been analysed, and there is nothing unusual in its chemical composition. Colonel KNOWLES comments on the invaluable opportunities which tours of this description provide for workers in different countries to compare notes with each other, and remarks that this visit has afforded a most useful stimulus for the local observers. He considers the Noamundi scheme of control one of the most complete and perfect in the world.

REFLECTIONS ON CROTCH v. MILES.

ON mere academic grounds the case of Crotch *v.* Miles (fully reported in the last two issues of THE LANCET) may be deemed regrettably inconclusive. Two serious legal issues were raised but not decided. To begin with, was not the claim barred by the Statute of Limitations? The plaintiff began proceedings just eight years after the surgical operation of which she complained; the statute says proceedings must be begun within six years. Here there was an ingenious rejoinder. The surgeon, it was argued, committed an act of trespass by leaving the forceps in the plaintiff's body (if the jury should decide that he did); this trespass continued till the removal of the forceps in 1928, so that the six-year period did not begin to run until this recent date. The defence of a statutory time-limit (important in the Harnett litigation and crucial in cases where the Public Authorities' Protection Act is invoked) is not a mere technical plea. The Statute of Limitations was passed to check the abuse of raking up stale claims, it being unfair that a defendant should be attacked at a date when, by reason of lapse of time, his power of defence is prejudiced. Crotch *v.* Miles illustrated the unfairness; a witness on whose evidence the defendant would have strongly relied had died in the eight years interval. How can a surgeon, physician, or dentist be otherwise than at a grave disadvantage if suddenly called upon to meet an attack based on something which happened eight years ago?

The other important issue in the case—the question of the respective liability of surgeon and theatre sister for the counting of forceps and swabs—is also left in the air. A definite ruling, given by the Court of Appeal of South Africa in 1924, was cited to show that it is a reasonable and proper practice to leave the duty of checking swabs to the theatre sister. In the South African case the surgeon had made a careful search at the conclusion of the operation and had relied upon the sister to count and check in accordance with the usual hospital practice; the Court held that, though the operating surgeon was bound to exercise all reasonable and proper care, he was in these circumstances not guilty of negligence in respect of one swab which was overlooked. If that is the law in South Africa, is it also the law in England? We do not know. The second question which the jury was invited to answer in Crotch *v.* Miles raised the issue of the surgeon's responsibility for the task entrusted to the sister, but the answer to the first question made further answers unnecessary. Something like the same issue arose in a hot-water bottle case not long ago. Are the legal relations of surgeon and sister those of principal and agent or of master and servant, or neither? The legal theory, broadly, is that if A has only the right to direct what work B is to do, the relation is that of principal and agent; if A has the further right to direct how B shall do the work, the relation is that of master and servant. B may be the servant of A though C pays the wages and has the power to dismiss; and B may be simultaneously the servant of A and C for different purposes. The Lord Chief Justice seems to have advised the jury that the theatre sister is not a servant but "one of a team." The legal implications of this status remain obscure. The relationship is presumably a question of fact for the jury; if so, the decision may differ with the facts of each case.

The public will have noted Lord HEWART's remark that, if a forceps is left inside a patient, somebody must be liable. Intolerant of subtle divisions of

responsibility, the public may—if these unusual incidents recur—ask the profession to undertake some means of compensating the patient, though the evidence in Crotch *v.* Miles suggests that the scheme might have to be international in scope. Already the Law Society is considering some collective plan to reimburse those who lose by a solicitor's defalcations. And Parliament is busy with proposals for the universal insurance of motorists so that no injured person shall go uncompensated. The risk of loss, of course, is run by the surgeon as well as by his patients. He may incur huge expense in defending himself against claims for alleged negligence. Here, fortunately, a system of insurance exists; the surgeon can cover his risk by joining one of the professional defence societies. Mr. MILES's defence was undertaken by the Medical Defence Union through their solicitors, Messrs. HEMPSONS; his subscription to the Union has proved a sound investment.

Annotations.

"Ne quid nimis."

THE HICKMAN MEMORIAL.

IT is impossible to estimate what mysterious moods will sway collective thought. We describe such a man as Galileo as born before his time, but it would be truer to say that his attempt to convince his fellows came during a refractory phase of the public temper. The times were not too early for his thought; they were simply "out of joint." It is a matter for speculation how many discoveries of value have been lost, swept away by a flood of untimely ridicule. Such was the fate of Henry Hill Hickman's work on anæsthesia at the beginning of the last century; and yet, less than 20 years later, the rediscovery of his principle was to engage the interest and support of the whole scientific world. His work was remarkable for patient, careful experimentation; his belief that anæsthesia, or, in his phrase, suspended animation, could be used to spare patients the pangs of surgical operation led him to inquire into the action of carbon dioxide on mice and dogs. In his notes he records experiments on a puppy a month old, which he placed on a piece of wood surrounded by water and enclosed in a glass cover; in ten minutes the puppy showed signs of uneasiness, and at the end of 17 minutes respiration ceased. Hickman was then able to remove one of the ears before returning respiration restored consciousness. Experiments made in a similar way, and others performed with carbonic acid gas, obtained from the action of sulphuric acid on lime, gave such good results that he attempted to bring his discovery before the Royal Society, 1824, and in the same year he published his pamphlet on "Suspended Animation." No reference to his work has been found in the Royal Society's records, but apparently it was severely criticised in the reviews, and condemned as wild and impractical. In 1828 his faith in his principle led him to present a memorial of his work to Charles X. of France with an appeal to be allowed to develop his theories in the French medical schools. A commission was certainly formed to inquire into his discovery, but no report of their opinion has yet been found, and the interest excited was clearly not great. Hickman returned disappointed to England and died at the beginning of 1830.

HENRY HILL HICKMAN, M.R.C.S.
(From an oil painting in the Wellcome Historical Medical Museum.)

His character, as indicated by his writings, was humane and kindly; in his pamphlet of 1824 he says: "if one grain of knowledge can be added to the general fund, to obtain a means for the relief of pain, the labours of the author will be amply rewarded"; and in writing of his experiments, he says they "were necessarily made upon living animals, but they were confined to animals previously condemned to death; and as their lives were preserved, and their suffering very slight . . . I venture to hope that they, in the aggregate, rather received benefit than injury." To his faith in his work he testifies in the last sentence of the pamphlet: "I feel so confident that animation in the human subject could be safely suspended by proper means, carefully employed, that (although I could not conscientiously recommend a patient to risk his life in the experiment) I certainly should not hesitate a moment to become the subject of it, if I were under the necessity of any long or severe operation." Yet in 1847 claims to the discovery of surgical anæsthesia were made by Morton, Wells, and Jackson in America, and in spite of the efforts of Dr. Thomas Dudley to direct attention to the earlier work of Hickman, the credit was apportioned unfairly. At the Wellcome Historical Medical Museum the documents relevant to Hickman's work are now exhibited. On the occasion of the centenary of his death on Wednesday Lord Dawson of Penn delivered an address at the Museum (see p. 776), when an admirably illustrated souvenir was offered to the guests. The Section of Anæsthetics of the Royal Society of Medicine are to place a memorial tablet on his tomb in Bromfield Churchyard to-day (Saturday) on the 100th anniversary of his burial. It is an easy matter to condemn our predecessors for lack of perception, but it engenders an uneasiness lest we are consigning our own prophets to the doubtful consolation of posthumous laurels.

PROF. W. H. WELCH AT EIGHTY.

THE eightieth birthday of William Henry Welch is to be celebrated on April 8th at several centres in Europe as well as in America. In London all who are interested are invited to attend at the London School of Hygiene and Tropical Medicine, at Keppel-street, W.C., at 4 P.M., when the Director, Sir Andrew Balfour, will give an address, with lantern illustrations, on Dr. Welch's life and work. The largest birthday gathering will be at Washington, when a meeting to be held in Continental Hall will be addressed by President Hoover, whose speech will be broadcast by radio across the continent, and relayed from the London Regional Station at 5 P.M. The chairman of the committee in charge of the arrangements is Dr. Simon Flexner, and the opening address is to be given by Dr. Livingston Farrand, president of Cornell University. A special feature of the occasion will be the presentation to Dr. Welch of the first print from a dry-point etching portrait of him made by Alfred Hutty.

William Henry Welch was born in Norfolk, Connecticut. His father was a practising doctor, as were also four uncles, a grandfather, and a great-grandfather. He entered Yale University at the age of 16, and four years later graduated B.A. After a

year spent in teaching Greek and Latin he matriculated in the College of Physicians and Surgeons of New York, but quickly realised the need for a better scientific foundation, and went back to Yale to study chemistry. Returning to New York in 1872 he won the award of a microscope, then a comparatively rare instrument, and with it began his notable career in the new science of pathology. In the early summer of 1876 he reached Strasbourg and studied histology and physiological chemistry under Waldeyer, Hoppe-Seyler, Baumann, and von Recklinghausen. Later he went to Leipzig, where he worked under Wagner and Ludwig. The next year found him at Breslau working under Cohnheim, who was then engaged on his text-book of general pathology, and already Welch's own contributions to bacteriology were considered worthy of being incorporated in the book. On his return to America he spent six years in the laboratories at Bellevue College, and in 1884 accepted the post of pathologist at Johns Hopkins Hospital. Before beginning his work at Baltimore in the autumn of 1885 he returned to Europe for further post-graduate study under Pettenkofer, Flügge, and Koch. He became the principal adviser in the early development of the Johns Hopkins Hospital, and in the selection of the other three original members of the staff, Osler, Halsted, and Kelly. When the medical school was opened in 1893 Welch was its first dean. His career from that time on in medicine and public health is well known. His resignation of his post as director of the school of hygiene four years ago was merely the opportunity for new efforts and the founding of a new institution. As professor of the history of medicine he set to work with characteristic energy to make a marked success of the new medical library at Johns Hopkins which was dedicated six months ago and named after him. He is still one of the most active figures in American medicine, and we trust he will long continue his public work.

A NEW ANTISEPTIC FOR INTERNAL USE.

THE announcement of the discovery of a new antiseptic for internal use always arouses considerable interest. The essential properties of low toxicity combined with high germicidal powers are so difficult to find in any one substance that the use of internal antiseptics is now on the decline. At the present time they probably find their greatest application in the treatment of infections of the urinary tract; but here again it is difficult to find any substance sufficiently non-toxic and non-irritating to the gastro-intestinal tract to ensure excretion in the urine in sufficient strength to destroy the invading organism. Of recent years attention has been directed towards the members of the homologous phenols. The first substance to find extensive employment was hexylresorcinol, an antiseptic introduced into medicine through the work of Johnson and Lane in 1921,[1] and Dohme, Cox, and Miller in 1926.[2] By studying the influence of alkyl substituents upon the germicidal value of resorcinol, they showed that it rose to a maximum at 4-*n*-hexylresorcinol, and also that the antiseptic powers of the *n*-alkylresorcinols were greater than those of branched-chain alkylresorcinols having the same number of carbon atoms. Coulthard, Marshall, and Pyman[3] thought that an investigation into the effect of alkyl substituents upon the antiseptic value of phenol and its homologues might yield valuable results, as information upon this subject was very scanty. They used the Rideal-Walker technique for the determination of the phenol coefficients, but solutions in dilute aqueous sodium hydroxide were employed, care being taken to keep the concentration of sodium hydroxide below lethal strength. All the alkyl derivatives were prepared by reduction of the corresponding ketones by Clemmensen's method. It was found that the phenol coefficients of the *n*-alkylcresols were generally higher than those of the corresponding *p*-*n*-alkylphenols, and very considerably higher than those of the *n*-alkylguaiacols, and, further, that the antiseptic powers of the compounds generally increased with the number of carbon atoms in the side chain up to the *n*-amyl derivative and then diminished. 4-*n*-amyl-*m*-cresol was studied in some detail, and proved to have phenol coefficients of from 200–300 not only when tested against *B. typhosus* but also against streptococci and staphylococci. Moreover, as compared with other substances, it has a low toxicity, and so would appear to be an important discovery from the point of view of medicine. Dr. Pyman, in an article in the current number of the *Journal of the Society of Chemical Industry*, points out also that it possesses a pleasant taste, which would make it very suitable for use in mouth-washes and similar preparations. In order to test its bactericidal action, varying solutions were added to 5 c.cm. of a mouth-washing, shaken up, and the number of colonies at the end of 5 and 15 minutes counted. A striking reduction was observed with solutions of 1 : 10,000 and 1 : 20,000. It will be interesting to observe experiments on its value as a urinary antiseptic.

[1] Johnson and Lane: Jour. Amer. Chem. Soc., 1921, xliii., 348.
[2] Dohme, Cox, and Miller: Ibid., 1926, xlviii., 1688.
[3] Coulthard, Marshall, and Pyman: Jour. Chem. Soc., February, 1930, p. 280.

HEALTH OF THE NAVY.

THE Statistical Report of the Health of the Navy for 1928[1] having now appeared (speeded up some three months on its predecessor) it is possible to compare the sickness and mortality-rates in the three Services for the year 1928.

Rates per thousand.	Cases.	Deaths—	
		Total.	From disease.
Navy	446	2·22	1·34
Army	426	2·5	1·63
Air Force	430	4·49	1·31

Both case rates and invaliding rates are diminishing in the Navy, and the death-rate from disease is the lowest yet recorded. The death-rate from violence is apparently only a quarter of that among British seamen in the mercantile marine during the same year. The number of men in the Navy in 1928 was 90,820, a decrease of about 2400. The chief causes of invaliding were as follows: 214 for diseases of eye; 119 for pulmonary tubercle (22 for non-pulmonary); 111 for diseases of the ear; 74 for wounds and injuries. Deaths were due in 50 cases to injury, in 17 to pulmonary tubercle (3 non-pulmonary), in 15 to pneumonia, in 15 to disease of intestines; 14 deaths were suicidal, 11 men were drowned. Vaccination against small-pox is now repeated every five years, with a single insertion which will involve less loss of service. Though vaccinations and revaccinations increased from 12,000 in 1927 to 19,000 in 1928, the resulting loss of service was reduced by a half. Three cases of small-pox were seen in China, of which one died. Diphtheria has, it is hoped, been banished from Greenwich Hospital School by Schick testing and immunisation; toxin-antitoxin floccules is regarded as the production of stimulating antitoxic immunity better than toxoid, and without causing reactions. A case of cutaneous diphtherial ulcer was recognised in hospital and cured with antitoxin, but no carriers were found in the ward. Of typhoid fever there were three cases with one death, of paratyphoid four cases. The cases of influenza numbered one-fifth only of those in 1927; they occurred chiefly at home. Malaria increased slightly, most of the cases coming from West Africa; in spite of prophylactic quinine, supervised mosquito nets, and other precautions, there were 41 cases on a sloop. A stoker who died of heat stroke in the East Indies showed post-mortem

[1] H.M. Stationery Office. 1930. Pp. 151. 5s.

subtertian parasites in the spleen. Cases of pneumonia were fewer, total 1·94 per 1000; at home, 2·63; abroad, 1·5. Rheumatic fever, with a case rate of 1·14, occurred about equally abroad and at home. Pulmonary tuberculosis shows much the same figure as last year, but invaliding is less. The chief incidence was on seamen, with 77 cases (2·05), the most dangerous age being between 20 and 25, but with increasing liability after five years' service. All three Services have reported specially on tubercle this year, and all find pleurisy to be a frequent precursor; seven years ago, in 1921, there was no special report on tubercle from any one of them,[2] and in all the prevalence of tubercle has since been much reduced—in the Army from 2·0 to 1·4; in the Navy from 2·38 to 1·99; in the Air Force from 1·7 to 1·1. Two of 20 cases in the Air Force at home, and 11 of 153 cases in the Navy, had a family history of tubercle. For venereal disease the figures are much the same as last year; all varieties are more frequent abroad than at home—chancroid three times, gonorrhœa twice, and syphilis slightly. The lowest case ratio is claimed for the Atlantic fleet (41·22), but that for marines at head quarters is lower (25·12). Invaliding for syphilis is stated at nine, but eight further cases of locomotor ataxia are mentioned among the nervous diseases. Of encephalitis lethargica, 16 cases are mentioned, 11 were invalided, and one died. Two cases of plague in natives ended fatally at Bombay, infected in a rat-infested boarding-house. Of disseminated sclerosis seven cases occurred. Teeth conserved were 61,664, or 676 per 1000 men; in a group of about a thousand mouths examined specially, 36·23 were dentally fit, 59·08 required treatment (3·44 urgently), 4·65 required dental work. Scabies cases average six days under treatment. Poisoning and suicide have increased from 62 and 7 to 101 and 14 cases. Injuries and heat stroke are much reduced. The leeway of war time is being overtaken, this report (as already noted) following its predecessor in three months less than a year; but there is still no sanitary report on the cadets at Dartmouth.

[2] Tuberculosis in the Services. See THE LANCET 1924, ii., 664.

THE COMPLEMENT-FIXATION TEST IN GONORRHŒA.

SEROLOGICAL reactions for the diagnosis of gonococcal infections have received rather scant attention in this country. In the October number of the *British Journal of Venereal Diseases* Dr. T. E. Osmond and Dr. J. O. Oliver have reviewed the results of testing over 5000 sera from unselected patients, some of whom suffered from gonorrhœa or syphilis or both diseases, others giving no history or evidence of venereal disease. A full description of the technique adopted is given, and the importance of the antigen used in this test is stressed. The method of preparation used is that of D. Thomson, in which suspensions of the organisms are dissolved in alkali and afterwards neutralised to an exact pH of 7·0. Many separate antigens are prepared and each is tested; those giving satisfactory results with the preliminary testing are pooled. The importance of using multiple strain antigens is very great, and, as a rule, not less than 12 selected ones should be taken for the preparation of the mixed product. This pooled antigen must be examined in parallel with a mixed antigen of known value in a considerable number of cases, or tried out against many sera from cases studied clinically when no previous antigen is available as a standard. From a classification of results into groups the remarkable specificity of the test becomes apparent, since the percentage of falsely positive results obtained is as low as 0·6 per cent. In all cases beyond the earliest stage a high proportion of positive results was obtained ranging from 50 to 95 per cent. in cases of definite gonococcal infection with complications. Up to the tenth day of the disease a positive result is not to be expected unless complications have already occurred; the incidence of positive results during this period is higher in males (13·9 per cent.) than in females (4·3 per cent.). An early positive reaction almost invariably indicates extension of the disease to the posterior urethra in the male or to the cervix uteri in the female. From the tenth to the twenty-first day of the disease is the commonest time for the appearance of the positive reaction, males giving 50·1 per cent. and females 54·3 per cent. These figures rise to 70·5 per cent. for males and 56·4 per cent. for females, when infection has lasted up to a year. Owing to the specificity of the test a positive result in any stage of the disease is practically diagnostic, whilst a negative reaction resembles a negative Wassermann reaction in that it may occur at any stage. Its diagnostic value is limited except in the differential diagnosis of complications such as arthritis or epididymitis, for in these a positive result is found in 95 per cent. of cases. Considerable difficulty exists with regard to the disappearance of a positive reaction with cure. Dr. Osmond and Dr. Oliver differ from certain other observers in that they do not regard the persistence of a positive reaction as proof of failure of cure. They regard the gradual falling off in the positive reaction as a normal event in many cases which subsequent history suggests were in reality cured. Cases are quoted which show that the disappearance of a positive reaction may be a slow process. Stock vaccines are thought to influence the reaction much less than autogenous ones. A negative reaction in a patient who has once shown a positive one is of great value as a criterion of cure.

NARCOTICS IN ASIA.

THE Society of Friends has for many years taken a deep interest in what is known as "the opium problem," and several of its members took an active part in the movement which led up to the abandonment of the Indo-Chinese opium trade. Among these was the late Mr. J. G. Alexander, the father of the author of a brochure recently published.[1] With the assistance of a travelling scholarship awarded to him by the Selly Oak Colleges, Mr. H. G. Alexander visited India, Rangoon, Malaya, and Java during 1927–28 with a view to making independent investigations of the present position of the opium question in those countries. As a result of this tour he is less severely critical of the opium policy of the Indian Government than are some of the more zealous writers on the subject. While rejecting the plea of the Royal Commission of 1895 that opium is a prophylactic against malaria, he considers the pernicious effects of opium-smoking and opium-eating as less disastrous, socially and morally, than the wholesale abuse of morphine, cocaine, and heroin, with which western countries have flooded Egypt, India, China, and the Far East. Mr. Alexander, nevertheless, condemns what he regards as the contradictory policy of the Indian Government in urging decreased consumption on the one hand, while "its agents are trying to push sales in order to increase revenue" on the other. In some parts of India, notably the United Provinces, Mr. Alexander was informed that cocaine addiction was "spreading like wild-fire"; huge figures indicating the extent of the illicit traffic and police seizures have been published, and according to the United Provinces Excise Report most of this contraband cocaine comes from Germany, Italy, and Japan. The allegation that India is being swamped with opium smuggled from China is here disputed; careful inquiries were made by Mr. Alexander and the conclusion was reached that illicit traffic proceeds from Persia and Rajputana. The cessation of the Indo-Chinese trade in 1907 left large stocks of opium in the hands of the merchants in the Malwa States which are outside Government control.

[1] Narcotics in India and South Asia. By H. G. Alexander, M.A. London: Williams and Norgate, Ltd. 1930. Pp. 61. 2*s.* 6*d.*

It is contended that from this source opium is being smuggled to many parts of the world, including South Africa, Australia, and other distant countries, as well as to British India. The author states that while in nearly all great cities of India opium addiction is common, in some it is serious, and that in the upper part of the Assam valley opium consumption is heavier than in any other part of British India. Parts of Orissa, of Beran, and of the Punjab are also black spots in this respect. The remedy suggested is registration and rationing, and in the cities the transfer of sale of opium to druggists, who should sell it only under medical prescription. In conclusion Mr. Alexander, while not minimising the evils of opium-eating and opium-smoking, insists that the "main guilt" lies with Western nations, who are making large profits by the excessive manufacture of morphine, heroin, and cocaine, and exporting these alkaloids by the ton, and by clandestine methods to the detriment of the native populations of Asia. His views are conceived in a more dispassionate spirit than are many of the disquisitions of lay writers on the opium problem and deserve attention. The message of this book confirms the conclusion which the Advisory Committee on opium at Geneva appears at last to be formulating, that, as The Hague Convention of 1912 implied, control of narcotic drugs *at the source* is the only way to restrict their use to legitimate medical purposes.

THE SLUM CLEARANCE BILL.

THE text of the Government's new Housing Bill was issued on Tuesday last, and Mr. Greenwood, the Minister of Health, will move the second reading next week. The measure, in addition to dealing with slum clearance and improvement, also contains provisions in regard to rural housing and small houses for aged persons. There are 56 clauses and five schedules, and the Bill is accompanied by a financial memorandum. The Bill is drafted with a view to enabling local authorities to direct their attention first of all to areas where conditions are so bad that the only remedy is clearance; secondly, to improvement areas, semi-slum areas which are degenerating into slums, partly because of overcrowding, and partly because of unsatisfactory buildings; and thirdly, to individual houses which are in need of repair, or are so bad that they must be demolished.

The first part of the measure deals with clearance areas and improvement areas, and the second part with individual insanitary houses. The definition of a clearance area is substantially the same as that of an unhealthy area under the existing law. The area can be cleared either by requiring the owners to demolish the buildings, or by the local authority purchasing the area and arranging for the demolition. The first method is new and is intended to enable local authorities to remove bad slums without being obliged to incur the heavy capital expense of purchase and clearance. The local authority will make a clearance order which must be confirmed by the Minister of Health—after a local public inquiry if objections are raised. When an order has been made it will be the owners' duty to demolish the buildings. If they fail to do so the local authority will be empowered to demolish and to recover the cost. The cleared site will remain with the owners who may, subject to local by-laws, dispose of it or redevelop it at their discretion. The second method of dealing with a clearance area will be by purchase by the local authority which would itself undertake the removal of buildings on the site. The procedure is intended to be more simple and expeditious than that at present in operation, and does away with the necessity for a formal scheme. The local authority having bought the land by agreement or by compulsion must proceed to demolish the buildings, and either appropriate the land for some purpose for which they have statutory powers, or otherwise dispose of it. In some cases they may have to rehouse on the site, or they may maintain it as an open space. Clauses 5 and 6 deal with improvement areas—those districts where the general conditions are not so bad as to justify wholesale clearance, and where a great improvement can be secured if the worst houses are removed, necessary repairs are executed, surplus population removed from the area, and steps taken to ensure that once the area has been improved it is not allowed to relapse. An essential part of any action taken by local authorities in regard to either clearance or improvement areas must be the provision of new houses, and the Bill requires that before taking any steps involving the displacement of population the local authority must undertake to provide new dwellings to the satisfaction of the Minister. Clause 5 enables local authorities to define improvement areas, and Clause 6 sets out the action which must be taken, when an area has been defined, to compel the demolition of houses which are beyond repair, and to put other houses into a satisfactory condition. It is not proposed to make any change in the present law of compensation for property in a clearance area. Property compulsorily acquired in such an area will be purchased site value with a reduction where the proposals involve the use of the cleared area for rehousing purposes or for an open space. Local authorities will, however, be enabled to make reasonable allowances to displaced persons for removal expenses and to compensate any loss which, in the opinion of the local authority, may be sustained by such persons owing to disturbance to their trade or business.

The second part of the measure proposes to alter the present law with regard to the repair and demolition of individual insanitary houses. The object will be to simplify the procedure, and it is provided that the appeal tribunal shall be the county court instead of the Minister. Houses which are considered unfit for human habitation may be divided into those which can be made fit at a reasonable expense and those which cannot. In the case of houses in the first class local authorities may require the owner to carry out the necessary work or, if the owners fail to do so, the authority may do it themselves and recover the cost. In suitable cases money may be lent to owners undertaking repairs. If the house cannot be made fit at a reasonable cost, the local authority may enforce an order for its demolition. The third part of the measure provides that the council of every borough and urban district (and in London the City Corporation and County Council) with a population of more than 20,000 shall submit a programme of housing work to the Minister in 1930 and every fifth year thereafter.

A new principle underlies the financial provisions of the Bill by which the present 50 per cent. grant is to be abolished and replaced by an annual grant on a unit basis, which the associations representing the local authorities are willing to accept. The new grant is to help towards the expenses incurred by local authorities in rehousing persons displaced from clearance areas; improvement areas and also individual insanitary houses outside those areas which are demolished by order of the local authority. The grant will be based on the number of persons required to be displaced for whom accommodation in new houses provided by the local authority is made available, and will be payable annually for 40 years. The normal grant will be 45*s.* a year per person required to be displaced, and this will be increased to 50*s.* in the case of persons displaced from houses in agricultural parishes. Where it is necessary to rehouse on expensive sites in tenement buildings of more than three storeys, or where the approved cost of the site exceeds £4000 an acre, the grant will be increased to 70*s.* per person. The object of this is to meet the special cases where people must be rehoused as near as possible to their work. Certain special conditions must be observed in regard to houses made available for displaced persons. Rents must be fixed by the local authority after taking into

account a charge on the rates of not less than the equivalent of £3 15s. a year for 40 years, the normal charge borne by the rates for houses provided under the Wheatley Housing Act. The Government believe that the increased assistance proposed will enable the authorities to provide a proportion of houses at "Wheatley" rents, and others at a definitely lower rental. Assistance is to be granted through local authorities to societies and companies engaged in housing who limit the amount of their dividends or who do not trade for profit, and who are willing to help in the work of rehousing persons displaced from slum areas. In Clause 39 there is a proposal to build houses for aged persons of a smaller size than the minimum in respect of which Exchequer assistance can now be given. The present Exchequer contribution is £7 10s. a year for 40 years. In respect of the new smaller houses it will be £5 a year for 40 years, equivalent to a capital value of £86.

A further attempt is to be made to deal with rural housing, and it is proposed to place a new responsibility on county councils by giving them power to undertake building on behalf of a rural district; by enabling them to contribute to the expenses of ordinary rural housing, and by putting an obligation on them to contribute to houses provided by rural councils for agricultural workers, or persons of similar economic status. It is proposed that the unit grant shall be reviewed every three years and at the same time the period at which the Wheatley grants are reviewed will be increased from two to three years. The Bill does not apply to Scotland, which is to be dealt with in a separate measure.

IN THE INTEREST OF MIDWIVES.

IMPROVEMENT of the midwifery service of the country requires united action on the part of all those interested in order that urgent problems may be dealt with promptly as they arise. This aim has led to the formation, at the instance of the Council of the Midwives Institute, of a joint committee representing the following bodies: Association of Inspectors of Midwives; Association for Promoting the Training and Supply of Midwives; the College of Nursing; the Incorporated Midwives Institute and the Queen's Institute of District Nursing. The objects of this joint committee, on which six additional members have been coöpted, are: (1) To support all schemes which in the opinion of this committee will genuinely promote the welfare of mothers and midwives; (2) to oppose any legislation involving transference of the control of the profession of midwifery from an independent body to a Government department; (3) to formulate proposals for the reorganisation of the special body which should have control over midwives and their training; and (4) to endeavour to arouse public opinion in support of the above objects. The committee has already received wide support for its policy on object (2). The committee is in entire agreement with the report of the departmental committee in so far as it relates to a comprehensive and national maternity scheme, provided that the legislation introduced is in accordance with the proposals outlined which are briefly as follows:—

(*a*) Medical examinations during antenatal period.

(*b*) The mother to retain a cash maternity benefit and in addition to be given the full services of a certified midwife or, alternatively, a doctor and a midwife acting as a maternity nurse.

(*c*) The services of a doctor when required.

(*d*) The services of a specialist on the doctor's request.

(*e*) Institutional provision for the confinement of abnormal cases, patients with unsuitable home conditions, and also for those who desire such arrangements.

(*f*) Further medical examination six weeks after the confinement.

(*g*) The midwife to be responsible for antenatal and postnatal care and nursing to cover a period of 14 days with increased number of visits.

On the other hand, the committee is not in favour of the proposed limitation of the midwife's cases to about 100 in the year, preferring the general acceptation that no midwife should undertake a larger number of cases than she can adequately deal with, in view of the additional work to be put upon her. The committee would make obligatory the following permissive provisions under the Maternity and Child Welfare Act—namely, subsidies to midwives in rural areas, the provision of sterilised maternity outfits to mothers free or at cost price, the payment of part or the whole of the fee to the midwife when the patient is necessitous, and the provision of post-certificate training for midwives. Local authorities should be empowered to give compensation for the midwife if a case for which she was engaged is sent to an institution, to provide for her in old age and sickness, and to assist in transport and telephone service in rural areas. The committee is of opinion that the Central Midwives Board or any new special body having control over midwives should retain the whole duties connected with the training, penal work, and the examinations and government of the profession. Such a body should, it is felt, consist as in the past of representatives from the Government, the midwives, the medical profession, and local authorities. Finally, the committee expresses the hope that the inspection of new training centres which apply for permission to train pupil midwives will be extended to all training schools, teachers, and systems of teaching.

Lady Houston has given £100,000 to St. Thomas's Hospital, London. The gift has been made without conditions, and will be paid into the general fund of the hospital.

WE regret to learn the death, which occurred on Sunday last in a nursing home, of Dr. John Yule Mackay, the well-known anatomist and Principal of University College, Dundee. For many years Prof. Mackay's share in the deliberations of the General Medical Council was recognised as authoritative on all educational questions.

THE first international Congress of Microbiology will be held in Paris from July 20th to 25th. Arrangements for attendance are being made by the British Committee of the International Society for Microbiology, and any who desire to take part in the Congress should apply to Messrs. Thos. Cook and Son, Berkeley-street, London, W.1, or to any of their branches.

THE first Congress of the International Society of Orthopædic Surgery, under the presidency of Sir Robert Jones, will be held in Paris from Oct. 2nd to 4th next. The vice-presidents of this Society are Prof. V. Putti, of Bologna, and Dr. Gocht, of Berlin, the secretary-general is Dr. Delchef, and the treasurer Prof. Maffei, both of Brussels. Subjects chosen for discussion at this congress are: (1) Treatment of congenital dislocation of the hip after the age of 15 years. On this subject America, Germany, Great Britain, and Italy have been asked to supply speakers. (2) Treatment of injuries in the region of the wrist-joint, which will be discussed by representatives of France, Holland, and Sweden. The Secretary of the Congress is Dr. Albert Mouchet, rue de Courcelles 124, Paris.

ROYAL FREE HOSPITAL.—The annual Court of Governors was attended last week by the American Ambassador and Mrs. Dawes, who visited the Eastman Dental Clinic, the gift of Mr. George Eastman, of Rochester, New York. The new obstetric department has been begun, and it was reported that the 365 beds are always full. The 1928 deficit of £16,595 has been reduced to £7538.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. to be Surg. Lt.-Comdrs.: J. G. Holmes, R. G. Anthony, and E. R. Sorley.

The following appointments are notified: Surg. Lts. C. J. Farr to *Verbena*; N. A. Dickinson to *Pembroke*, for R.M. Infirmary, Chatham; and R. B. McVicker to *Veronica*.

ROYAL ARMY MEDICAL CORPS.

Maj. W. J. E. Bell, from the secd. list, is restd. to the estabt.

Maj. A. F. I. Patterson retires, receiving a gratuity, and is re-empld. under Art. 507 (*b*), Royal Warrant for Pay and Promotion.

Lt. W. H. Scriven is secd. for serv. with the Sudan Def. Force.

TERRITORIAL ARMY.

Capts. P. Lloyd-Williams, W. R. Watt, and J. T. Kyle to be Majs.

Capt. R. W. Gemmell (late R.A.M.C.) to be Capt.

Lt. R. E. Holme to be Capt.

Lt. R. V. Facey (late R.A.F.) to be Lt.

W. W. Crawford to be Lt.

Supernumerary for Service with O.T.C.: J. P. Raban (late Offr. Cadet, Lond. Univ. Contgt., Sen. Div., O.T.C.) and H. H. Kenshole (late Offr. Cadet, Univ. of Lond. Contgt., Sen. Div., O.T.C.) to be Lts., supern. for serv. with Med. Unit, Univ. of Lond. Contgt., Sen. Div., O.T.C.

ROYAL AIR FORCE.

Flight Lt. E. J. T. McWeeney is transferred to the Reserve, Class Di.

INDIAN MEDICAL SERVICE.

Capt. A. K. Sahibzada to be Maj.

The probationary appts. of the undermentioned officers are confirmed. The order of seniority is as now notified:—To be Capts.: F. R. W. K. Allen. To be Lts.: A. V. O'Brien, S. T. Davies, E. S. S. Lucas, H. W. Farrell, J. S. McMillan, V. E. M. Lee, M. R. Sinclair, G. B. W. Fisher, R. A. Paton, G. F. Condon, H. S. Smithwick, and D. Tennant.

DEATHS IN THE SERVICES.

Fleet-Surg. Alfred Thomas Corrie, R.N. (retd.), who died at Plymouth on March 28th, entered the Navy as surgeon in 1872. He served in the corvette *Pearl*, and was present at Santa Cruz, South Pacific, when an attack was made on shore by natives. This resulted in the death of the Commodore and two men, and Corrie was placed in medical charge of the boats sent to punish the outrage. For some time he was surgeon at the Plymouth Naval Hospital, to the Royal Marine Artillery Infirmary at Eastney, and to the R.N. Hospital, Ascension. He was promoted to staff surgeon in 1884, fleet-surgeon in 1892, and retired in 1902.

ROYAL MEDICAL BENEVOLENT FUND.—During the first quarter of this year £2562 has been voted in grants to 121 applicants. At the last meeting of the committee 42 grants were voted, amounting to £866. The following were some of the cases helped:—

M.R.C.S., aged 76. Married, wife aged 66. Applicant suffers from advanced chronic glaucoma. He has lost the sight of his right eye. Although maintaining some sight in his left eye he is becoming more helpless and dependent on others. Applicant and his wife have no private income; he is in receipt of Old Age Pension £26 a year. Four married children contribute £96 towards the maintenance of their parents. Fund voted £40.

M.R.C.S., aged 59. Applicant is bedridden and is suffering from progressive paralysis in the legs. He was compelled to give up his practice in 1925. His savings had been invested in house property. The fall in values and the annual outlay in repairs has reduced the income derived therefrom to £130. Being bedridden he has to pay for nursing and attendance in addition to board and lodging. Fund voted £20.

Widow, aged 38, of M.R.C.S. The husband had been ill for several years with Bright's disease. On his death the widow was left with £250 a year and eight children to educate. One has obtained a Scholarship. Freemasons are paying part school fees for another. Friends and relations are helping towards other school fees. Fund voted £25 and have asked the Royal Medical Benevolent Fund Guild to coöperate in this case.

Daughter, aged 61, of M.D. Has been a companion housekeeper from the date of her father's death till December, 1929, when her employer died. She has no private income, now staying with friends. Fund voted £26.

Subscriptions and donations are very urgently needed as the number of applications received during the first three months of this year is even larger than that of last year.

Cheques should be forwarded to the honorary treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, Cavendish-square, London, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCCI.—THE TREATMENT OF SYPHILIS.*

IN a short article it is possible to deal with only a small section of such a vast subject as the treatment of syphilis. I am here concerned mainly with generalisations and principles. I will speak first of the principles of treatment of early syphilis—i.e., of the so-called primary and secondary stages.

TREATMENT OF EARLY CASES.

Lessons from Experimental Syphilis.

Certain investigations in experimental syphilis seem to have a bearing on the problem in the human subject. The observations of W. H. Brown and L. Pearce on the course of syphilis in rabbits after experimental inoculation showed that it resembles the course of another spirochætal disease—relapsing fever—in its succession of phases of active disease alternating with phases of latency. In the rabbit the disease seems to become active in tissues according to a more or less regular order of sequence. Thus, in cases where manifestations become generalised, after the primary lesion, bones, followed by skin and then eyes, appear to become affected.

A further point of some importance is that the successive phases of activity are influenced in their locality and degree by the degree of severity of their predecessors. Thus Brown and Pearce found that if a rabbit has two primary sores it is much less likely to develop generalised lesions than if it has only one. Further, if the development of the primary lesion or lesions is interfered with, by excision of the area of inoculation or by administering antisyphilitic remedies in subcurative doses, the rabbit is much more likely to develop generalised lesions. Brown and Pearce found, in fact, that they could more or less determine the locality of metastatic lesions by interfering with the primary sore at given stages of its development. Thus by fairly early interference they would find the bones unprotected, and metastatic lesions would occur there. If subcurative treatment was withheld until a little later, the metastases would skip bones and occur in the next tissue in the natural order of sequence for lesions in the rabbit—viz., skin—or the skin might be skipped and the eyes become affected. Brown and Pearce's investigations showed, in fact, what has been demonstrated by numerous workers, that the syphilised animal develops a resistance to the spirochæte of syphilis which is proportional to the degree and duration of the interaction between spirochætes and tissues. As another example of the same effect is the fact that a syphilised rabbit can be super- or reinfected at an early stage of the infection, but if one waits for about three months before eradicating the disease it has now become immune to reinfection with, at any rate, the same strain of virus.

I suggest that this has a bearing on the treatment of human syphilis in this way. We know that the virus spreads through the body very rapidly. For example, changes in the cerebro-spinal fluid have been demonstrated even as early as the primary stage before the serum reactions have become negative, and we must suppose that at the time we commence the treatment of our early case there are nests of spirochætes in practically every tissue of the body. We have also good reason for believing that some foci are less accessible to our remedies than others and that amongst the less accessible are those in the central nervous system. If we were to allow the disease to take its natural course, we should expect in most

* The substance of this article formed the opening address in a discussion at the Medical Society of London on Feb. 24th.

cases a widespread eruption on the skin and mucous membranes. I suggest that the effect of this eruption would be to confer a strong degree of resistance on the tissues generally, including those of the central nervous system, and this idea is certainly favoured by the fact that in cases of late neurosyphilis such as tabes and general paresis one rarely finds a history of secondary symptoms.

So far the argument has favoured the idea that, if we interfere with the development of the disease in the skin and mucous membranes, we interfere with the development of a resistance to the activity of the parasite in other parts of the body which would tend to save him from severe late effects of the disease in such vital structures as central nervous system and cardiovascular system, and there are some who even say that if they had syphilis they would not commence treatment until the secondary stage was well over. I wonder if they would if it came to it. There are many reasons against such a procedure, the most important being the danger to other persons, the greater opportunity given to the spirochæte to become protected in foci of fibrosed tissue, and therefore inaccessible to later attack, and also the possibility that, after all, the skin reaction might not take place. When we weigh up the question of early interference by treatment versus allowing the disease to develop I do not think we can avoid deciding in favour of early interference. But we must keep in mind the risk we run of leaving the less accessible foci untouched by our remedies and unhampered in their development by the antibodies which would probably have formed if we had let the disease have full play with the skin. The moral seems to be that, if we interfere early, we must do so thoroughly and with the proper remedies.

Remedies Employed in the Treatment of Syphilis.

In considering the remedies and their place in the therapy of early syphilis, I would divide them into two main classes, antispirochætal and tissue stimulant. In the antispirochætal are mainly the preparations of arsenic, mercury, and bismuth, as well as a certain number of other metals such as vanadium, tellurium, and gold which have not come into general use. Amongst the tissue stimulant is pre-eminently iodine, and we should also include all preparations designed to raise the general resistance.

I would divide the antispirochætal preparations into two main classes, the arsenobenzols and the others because, generally speaking, the one is supplementary to the other. The *arsenobenzol preparations* are distinguished for the rapidity of their effect, but mainly also for its transience. The spirochæticidal effect of an arsenobenzol injection is dramatic so far as we can judge from examinations of the secretion from surface lesions, but it is over in at most 48 hours. If the dose is large enough it brings to an abrupt end the interaction between the spirochætes and the surface tissues. But does it kill off so easily those spirochætes which are buried in the central nervous system, and the cardiovascular system, and perhaps the viscera? The literature on early syphilitic neurorecurrences shows that in the overwhelming majority of cases they have occurred in cases treated only with arsenobenzol preparations. The patient has fallen between two stools, the development of a protective immunity has been stopped, and its substitute has been insufficient to destroy foci in the meninges. These nests of spirochætes have quickly recovered and have been unrestrained by any immune body. We have here, in fact, a close analogy to the case of the rabbits in which the development of initial lesions was hindered. We need something more than the arsenobenzol class of preparation for the eradication of syphilis, or shall we say for the protection of the patient against the activity of the spirochæte, and herein is a rôle for the antispirochætal remedies of the other class represented in working practice by mercury and bismuth.

Mercury has long been known as a remedy which acts slowly but more or less persistently. As judged by animal experiments, its spirochæticidal action is feeble in relation to its toxic, and, personally, I have always believed that in most cases treated by mercury the disease has just simmered on. The patient may have been protected against the development of granulomata, but has been rid of his infection. An advantage, however, of mercury, as also of bismuth, is that it can be given in such a way that it remains in the body constantly, restraining the action of the spirochætes, or perhaps restraining the tissues from kicking against them. Mercury has the advantage over bismuth that it can be given otherwise than by injection, as for example if one wishes to continue treatment by mouth, but when injection treatment is indicated I think that the preference will be given to bismuth because this is tolerated far better.

Bismuth.—According to the experiments of Levaditi and other workers, bismuth is much more actively spirochæticidal than mercury. Levaditi and a few others consider that bismuth is superior to the arsenobenzol preparations, but most workers rank it as a substitute for mercury. Certainly, by giving the more soluble preparations of bismuth, one can cause *S. pallida* to disappear quickly from the secretion of surface lesions, but there are disadvantages in the use of such preparations from the point of view of toxic effects, and unless there are contra-indications to the use of arsenobenzol, I prefer, like most workers, to give bismuth in such a form and in such a way as to ensure a steady absorption which on the one hand is not so rapid as to upset the mouth and kidneys, and on the other, not so slow that successive injections build up a large depôt at the sites of injection. Too large a depôt might become dangerous if the absorptive capacity of the tissues suddenly became greater as happened occasionally in the bismuth treatment of war wounds. The experiments of Levaditi and colleagues have shown that the antisyphilitic effect of bismuth is exercised when the tissues, apart from those at the sites of the injections, have taken up a certain minimal amount of the metal proportional to their weight. Later Lomholt found that a watery suspension of bismuth oxychloride was absorbed with satisfactory evenness. Engelhardt's analyses of urine from patients after administration of various preparations of bismuth showed inter alia that paraffin is worse than oil as a vehicle of suspension and that the absorption of the tartro-bismuthate of potassium and sodium (trepol) suspended in oil is very slow. This seems to be confirmed by Levaditi's finding that the administration of the maximum tolerated dose of trepol to a rabbit protects it against syphilitic infection for 152 days. Engelhardt's work generally showed that the most evenly absorbed of the preparations which he tested was a solution of bismuth naphthenate in oil which is sold as Embial. I have very little experience of this preparation—certainly not enough to enable me to compare it with others. Amongst other preparations which he investigated the subsalicylate in oil proved satisfactory.

My own experience is largely confined to bismuth in fine subdivision, the oxychloride suspended in glucose solution, the salicylate suspended in oil, and iodo-bismuthate of quinine. Generally I prefer a compound to the metal in fine subdivision, though I cannot support the preference by any analyses showing rates of absorption. An early case which was intolerant of "914" had received a number of injections of bismuth metal and should theoretically have been thoroughly under its influence. He developed paralysis of the sixth cranial nerve, and I began to doubt the absorption. It seems probable that, whatever preparation is used, it is reduced to the same state, a compound of the r[illegible] i.e., Levaditi's bismoxyl—before [illegible] taken into the circulation, so that one might imagine it better to feed bismuth to the tissues in the form of the metal itself just as is often done in giving mercurial injections. On the other hand, it seems probable that the metal may be more easily absorbed when in the nascent state newly removed from a compound, and I think there is support for this in the fact that the soluble compounds

of bismuth are far more rapidly absorbed than is the metal in fine subdivision. The iodo-bismuthate of quinine has the disadvantage of a low bismuth content, about 20 per cent., so that the individual injections have to be bulky to ensure the absorption of a sufficiency of bismuth, and I prefer the oxychloride or the salicylate. Of either the salicylate or the oxychloride I give 4 g. (totalling 2 to 3·2 g. bismuth metal) in a course of ten injections.

Concurrent versus Alternate Courses.

A question of considerable importance is whether one should give the bismuth at the same time as the arsenobenzol or give first a course of arsenobenzol injections and then one of bismuth. Firmly (I might say dogmatically) I am convinced that it is a mistake in an early case of syphilis to withhold the bismuth or the mercury until the end of the first course. Earlier in this article I pointed out that patients treated by arsenobenzol preparations alone tend more to suffer from syphilitic neuro-recurrences, and when I compare my experience in this matter with that of clinicians who give only arsenobenzol preparations at first, I am certain that the plan of giving the two remedies concurrently protects the central nervous system.

The next question is the amount of treatment which should be given to an early case of syphilis. In the analysis of cases treated at St. Thomas's Hospital, which was published some time ago by the Medical Research Council, I showed that some seemed to have been cured by an amount of treatment which nobody would agree was sufficient for the average case. On the other hand, even with sero-negative primary cases less than three full courses of "914" (5 to 6 g. in each) and bismuth or mercury, with intervals of two and three months between courses, left us with a percentage of relapses. With cases of sero-positive primary and of early secondary syphilis in the categories which had received even three courses there were 10 per cent. of relapses in my series, and I think that for cases which have reached the stage of positive serum reactions it will be necessary to prescribe more than three such courses as we give at St. Thomas's. I have tried the effect of spacing out the injections of "914" at much longer intervals than is customary at present, filling up the intervening weeks with injections of bismuth. The immediate results seem to have been as good as those of the course in which we gave ten injections of "914" in 13 weeks, but I am not yet able to speak as to permanence of effect.

I had hoped to prevent toxic effects of "914" by dissolving the remedy in 10 per cent. sodium thiosulphate, but, although dermatoses were reduced, the incidence of jaundice remained the same. We are now dissolving the "914" in 20 c.cm. of 40 per cent. of glucose, and I think that it has had a good effect in reducing the incidence of jaundice.

Summary.

To summarise my views on the treatment of early syphilis I would say that:

(*a*) The results of treatment before the serum reactions have become positive are far superior to those in later cases even though the secondary rashes have not appeared.

(*b*) The concurrent use of bismuth (or mercury) with "914" is likely to result in a minimum of relapse in the central nervous system—far less than when a course of "914" is followed by one of bismuth or mercury.

(*c*) However early the treatment is commenced three full courses should be given each totalling 5 to 6 g. "914" and 2½ to 3 g. bismuth and lasting 10 to 13 weeks. If treatment commenced after the serum reactions had become positive, I would now prescribe more than three such courses.

TREATMENT OF LATER CASES.

Tertiary manifestations affecting the skin, mucous membranes, bones, muscles &c., require little mention because they usually yield to such treatment as is given to early cases. In late affections of the cardiovascular system I am a believer in the use of arsenobenzol preparations. Some workers consider these preparations are contra-indicated in syphilitic myocarditis, and I admit that one has to proceed carefully, but with doses of 0·2 to 0·3 g. sulpharsenobenzol given twice weekly, concurrently with bismuth injections, I have seen most beneficial effects. In tertiary disease of the liver I think arsenobenzol treatment is contra-indicated and prefer to rely on bismuth and iodides. In syphilis of the meninges after a cautious start lest a Herxheimer reaction should prove serious, I think one should push both arsenical and bismuth preparations to the limit of tolerance and I have seen only good from following this line. In *tabes* I prefer sulpharsenobenzol intramuscularly in conjunction with bismuth, or silver-salvarsan intravenously, and here also when practicable adopt the plan of giving injections twice weekly. Our results with tryparsamide have been rather mixed, but in both tabes and general paresis, like other workers, I have seen great benefit from malarial treatment.

I have said little about the use of iodides. Their rôle appears to be to stimulate the tissues to remove infiltrates, and for this purpose they seem to be indicated in early as well as in late stages. The work by Brown and Pearce already mentioned indicates also that iodides assist the defensive reactions and this is another reason for employing them. In later cases, and especially in tabes, I believe in pushing iodides to the limits of tolerance.

Lastly, I should like to emphasise the importance of measures designed to improve the patient's metabolism. We depend for spirochæticidal effect on derivatives of our remedies and patients differ greatly in the use they make of what we put into them as we can surmise from the fact that while some patients have been cured by single doses of "606," others have proved most intractable. We know too little about the processes which make for a good response to treatment, but one can well believe that the patient who is kept physiologically fit will afford us a better result than a sluggard or one we depress unduly by pursuing a rigid programme in spite of obvious signs of intolerance. Altogether, therefore, I would give plenty of treatment but only on condition that my patient is not unduly depressed by it. If he is, perhaps a holiday in good surroundings will do more for him than many injections.

L. W. HARRISON, F.R.C.P. Edin.,
Director, V.D. Department, St. Thomas's Hospital.

MEMORIAL TO A PHYSICIAN.—A tablet to the memory of the late Dr. J. T. Dunlop, who was honorary physician to the Newcastle Hospital for Diseases of the Skin, has been placed in the entrance hall of the building.

BIRMINGHAM HOSPITALS.—Birmingham General Hospital closed last year with a debit balance of £26,000; the Queen's Hospital had a deficit of £14,500. The dietetic clinic at the General Hospital "has gained in importance," and further developments have been made in the treatment of cancer by radium. The institution has been selected as a centre for radium treatment and research. Motor accidents are costing between £10,000 and £15,000 a year, and at the annual meeting it was finally decided so to alter the rules as to enable the victims of such accidents to be asked to pay for treatment. There were over 7000 in- and nearly 58,000 out-patients. The experiment of setting aside 30 beds for paying patients has proved an entire success from all points of view.—At the Queen's Hospital the average daily cost of in-patients (5004, an increase of 448) was 8*s.* 7*d.* and of each bed per year £156 14*s.* 3*d.* The report of the hospital work of the Birmingham Board of Guardians for the year ended on March 31st, 1929, shows that at the Dudley Road and Selly Oak Hospitals and the Lordswood Nursery, 22,958 in-patients were treated.—At the annual meeting of the Midland Nerve Hospital it was stated that the institution had reached saturation point as regards in-patients, and that "no other hospital out of London is treating nerve diseases as they are being treated" at that hospital. There were 53,000 out-patient attendances last year. An operating theatre and some isolation wards are to be added.

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Mercury has long been known as a remedy which acts slowly but more or less persistently. As judged by animal experiments, its spirochæticidal action is feeble in relation to its toxic, and, personally, I have always believed that in most cases treated by mercury the disease has just simmered on. The patient may have been protected against the development of granulomata, but has been rid of his infection. An advantage, however, of mercury, as also of bismuth, is that it can be given in such a way that it remains in the body constantly, restraining the action of the spirochætes, or perhaps restraining the tissues from kicking against them. Mercury has the advantage over bismuth that it can be given otherwise than by injection, as for example if one wishes to continue treatment by mouth, but when injection treatment is indicated I think that the preference will be given to bismuth because this is tolerated far better.

Bismuth.—According to the experiments of Levaditi and other workers, bismuth is much more actively spirochæticidal than mercury. Levaditi and a few others consider that bismuth is superior to the arsenobenzol preparations, but most workers rank it as a substitute for mercury. Certainly, by giving the more soluble preparations of bismuth, one can cause *S. pallida* to disappear quickly from the secretion of surface lesions, but there are disadvantages in the use of such preparations from the point of view of toxic effects, and unless there are contra-indications to the use of arsenobenzol, I prefer, like most workers, to give bismuth in such a form and in such a way as to ensure a steady absorption which on the one hand is not so rapid as to upset the mouth and kidneys, and on the other, not so slow that successive injections build up a large depôt at the sites of injection. Too large a depôt might become dangerous if the absorptive capacity of the tissues suddenly became greater as happened occasionally in the bismuth treatment of war wounds. The experiments of Levaditi and colleagues have shown that the antisyphilitic effect of bismuth is exercised when the tissues, apart from those at the sites of the injections, have taken up a certain minimal amount of the metal proportional to their weight. Later Lomholt found that a watery suspension of bismuth oxychloride was absorbed with satisfactory evenness. Engelhardt's analyses of urine from patients after administration of various preparations of bismuth showed inter alia that paraffin is worse than oil as a vehicle of suspension and that the absorption of the tartro-bismuthate of potassium and sodium (trepol) suspended in oil is very slow. This seems to be confirmed by Levaditi's finding that the administration of the maximum tolerated dose of trepol to a rabbit protects it against syphilitic infection for 152 days. Engelhardt's work generally showed that the most evenly absorbed of the preparations which he tested was a solution of bismuth naphthenate in oil which is sold as Embial. I have very little experience of this preparation—certainly not enough to enable me to compare it with others. Amongst other preparations which he investigated the subsalicylate in oil proved satisfactory.

My own experience is largely confined to bismuth in fine subdivision, the oxychloride suspended in glucose solution, the salicylate suspended in oil, and iodo-bismuthate of quinine. Generally I prefer a compound to the metal in fine subdivision, though I cannot support the preference by any analyses showing rates of absorption. An early case which was intolerant of "914" had received a number of injections of bismuth metal and should theoretically have been thoroughly under its influence. He developed paralysis of the sixth cranial nerve, and I began to doubt the absorption. It seems probable that, whatever preparation is used, it is reduced to the same state, a compound of the r[illegible] i.e., Levaditi's bismoxyl—before [illegible] into the circulation, so that one might imagine it better to feed bismuth to the tissues in the form of the metal itself just as is often done in giving mercurial injections. On the other hand, it seems probable that the metal may be more easily absorbed when in the nascent state newly removed from a compound, and I think there is support for this in the fact that the soluble compounds

of bismuth are far more rapidly absorbed than is the metal in fine subdivision. The iodo-bismuthate of quinine has the disadvantage of a low bismuth content, about 20 per cent., so that the individual injections have to be bulky to ensure the absorption of a sufficiency of bismuth, and I prefer the oxychloride or the salicylate. Of either the salicylate or the oxychloride I give 4 g. (totalling 2 to 3·2 g. bismuth metal) in a course of ten injections.

Concurrent versus Alternate Courses.

A question of considerable importance is whether one should give the bismuth at the same time as the arsenobenzol or give first a course of arsenobenzol injections and then one of bismuth. Firmly (I might say dogmatically) I am convinced that it is a mistake in an early case of syphilis to withhold the bismuth or the mercury until the end of the first course. Earlier in this article I pointed out that patients treated by arsenobenzol preparations alone tend more to suffer from syphilitic neuro-recurrences, and when I compare my experience in this matter with that of clinicians who give only arsenobenzol preparations at first, I am certain that the plan of giving the two remedies concurrently protects the central nervous system.

The next question is the amount of treatment which should be given to an early case of syphilis. In the analysis of cases treated at St. Thomas's Hospital, which was published some time ago by the Medical Research Council, I showed that some seemed to have been cured by an amount of treatment which nobody would agree was sufficient for the average case. On the other hand, even with sero-negative primary cases less than three full courses of "914" (5 to 6 g. in each) and bismuth or mercury, with intervals of two and three months between courses, left us with a percentage of relapses. With cases of sero-positive primary and of early secondary syphilis in the categories which had received even three courses there were 10 per cent. of relapses in my series, and I think that for cases which have reached the stage of positive serum reactions it will be necessary to prescribe more than three such courses as we give at St. Thomas's. I have tried the effect of spacing out the injections of "914" at much longer intervals than is customary at present, filling up the intervening weeks with injections of bismuth. The immediate results seem to have been as good as those of the course in which we gave ten injections of "914" in 13 weeks, but I am not yet able to speak as to permanence of effect.

I had hoped to prevent toxic effects of "914" by dissolving the remedy in 10 per cent. sodium thiosulphate, but, although dermatoses were reduced, the incidence of jaundice remained the same. We are now dissolving the "914" in 20 c.cm. of 40 per cent. of glucose, and I think that it has had a good effect in reducing the incidence of jaundice.

Summary.

To summarise my views on the treatment of early syphilis I would say that:

(*a*) The results of treatment before the serum reactions have become positive are far superior to those in later cases even though the secondary rashes have not appeared.

(*b*) The concurrent use of bismuth (or mercury) with "914" is likely to result in a minimum of relapse in the central nervous system—far less than when a course of "914" is followed by one of bismuth or mercury.

(*c*) However early the treatment is commenced three full courses should be given each totalling 5 to 6 g. "914" and 2 to 3 g. bismuth and lasting 10 to 13 weeks. If treatment commenced after the serum reactions had become positive, I would now prescribe more than three such courses.

TREATMENT OF LATER CASES.

Tertiary manifestations affecting the skin, mucous membranes, bones, muscles &c., require little mention because they usually yield to such treatment as is given to early cases. In late affections of the cardiovascular system I am a believer in the use of arsenobenzol preparations. Some workers consider these preparations are contra-indicated in syphilitic myocarditis, and I admit that one has to proceed carefully, but with doses of 0·2 to 0·3 g. sulpharsenobenzol given twice weekly, concurrently with bismuth injections, I have seen most beneficial effects. In tertiary disease of the liver I think arsenobenzol treatment is contra-indicated and prefer to rely on bismuth and iodides. In syphilis of the meninges after a cautious start lest a Herxheimer reaction should prove serious, I think one should push both arsenical and bismuth preparations to the limit of tolerance and I have seen only good from following this line. In *tabes* I prefer sulpharsenobenzol intramuscularly in conjunction with bismuth, or silver-salvarsan intravenously, and here also when practicable adopt the plan of giving injections twice weekly. Our results with tryparsamide have been rather mixed, but in both tabes and general paresis, like other workers, I have seen great benefit from malarial treatment.

I have said little about the use of iodides. Their rôle appears to be to stimulate the tissues to remove infiltrates, and for this purpose they seem to be indicated in early as well as in late stages. The work by Brown and Pearce already mentioned indicates also that iodides assist the defensive reactions and this is another reason for employing them. In later cases, and especially in tabes, I believe in pushing iodides to the limits of tolerance.

Lastly, I should like to emphasise the importance of measures designed to improve the patient's metabolism. We depend for spirochæticidal effect on derivatives of our remedies and patients differ greatly in the use they make of what we put into them as we can surmise from the fact that while some patients have been cured by single doses of "606," others have proved most intractable. We know too little about the processes which make for a good response to treatment, but one can well believe that the patient who is kept physiologically fit will afford us a better result than a sluggard or one we depress unduly by pursuing a rigid programme in spite of obvious signs of intolerance. Altogether, therefore, I would give plenty of treatment but only on condition that my patient is not unduly depressed by it. If he is, perhaps a holiday in good surroundings will do more for him than many injections.

L. W. HARRISON, F.R.C.P. Edin.,
Director, V.D. Department, St. Thomas's Hospital.

MEMORIAL TO A PHYSICIAN.—A tablet to the memory of the late Dr. J. T. Dunlop, who was honorary physician to the Newcastle Hospital for Diseases of the Skin, has been placed in the entrance hall of the building.

BIRMINGHAM HOSPITALS.—Birmingham General Hospital closed last year with a debit balance of £26,000; the Queen's Hospital had a deficit of £14,500. The dietetic clinic at the General Hospital "has gained in importance," and further developments have been made in the treatment of cancer by radium. The institution has been selected as a centre for radium treatment and research. Motor accidents are costing between £10,000 and £15,000 a year, and at the annual meeting it was finally decided so to alter the rules as to enable the victims of such accidents to be asked to pay for treatment. There were over 7000 in- and nearly 58,000 out-patients. The experiment of setting aside 30 beds for paying patients has proved an entire success from all points of view.—At the Queen's Hospital the average daily cost of in-patients (5004, an increase of 448) was 8*s.* 7*d.* and of each bed per year £156 14*s.* 3*d.* The report of the hospital work of the Birmingham Board of Guardians for the year ended on March 31st, 1929, shows that at the Dudley Road and Selly Oak Hospitals and the Lordswood Nursery, 22,958 in-patients were treated.—At the annual meeting of the Midland Nerve Hospital it was stated that the institution had reached saturation point as regards in-patients, and that "no other hospital out of London is treating nerve diseases as they are being treated" at that hospital. There were 53,000 out-patient attendances last year. An operating theatre and some isolation wards are to be added.

Special Articles.

A NOTE ON THE HEALTH OF THE CONSUMPTIVE WORKER UNDER SETTLEMENT CONDITIONS.

BY E. L. SANDILAND, M.B. LOND., D.P.H.,
MEDICAL SUPERINTENDENT, EAST LANCASHIRE TUBERCULOSIS COLONY.

IN view of the interest taken in this subject by many tuberculosis officers and other workers in tuberculosis some observations after six years' experience of a small settlement may be worthy of note. The East Lancashire Tuberculosis Colony and Sanatorium was established at Barrowmore Hall, near Chester, in 1921 for concurrent treatment and training of 70 cases. In 1924 the accommodation was extended to 112 beds, and sanatorium cases were admitted for treatment. In 1928 the accommodation was extended to 120 cases. Twelve cottages have been built for married settlers and a hostel for ten single settlers.

Sickness Among Settlers.

The first colonist was settled in 1922, and he is still in the settlement. Since that date 33 other men have been made settlers. Of these 34 settlers, three advanced cases have died and five have left the settlement, in the majority of cases to take up work elsewhere. There are now 26 settlers in all on the estate. The length of time these men have been settled and the periods of sickness up to Jan. 1st, 1930, are as given in Table I.

TABLE I.

Time colonised.	No. of men.	Total period of sickness for each group.
7 to 8 years.. ..	1	6 weeks.
5 „ 6 „	9	60 „
4 „ 5 „	2	3 „
3 „ 4 „	5	20 „
2 „ 3 „	4	15 „
1 „ 2 „	1	nil
Up to 1 year ..	4	nil
—	26 men.	104 weeks.

The total time of settlement of these 26 men amounts to 93 years and the total period of sickness from tuberculosis amounts to two years.

Types of Industry.

The industries carried on are these :—

(1) *Woodwork*—in which the majority of the men are employed. The heavy work is done by machinery to relieve the workers and increase the output. Some of the settlers, however, have a surprising capacity and desire for the heavier work. One case of artificial pneumothorax, which was at one time double, has given the medical staff some anxious moments on account of his zest for work.

(2) *Upholstery.*—One worker employed in this industry had a severe attack of pneumococcal lobar pneumonia and recovered; this attack apparently suspended the activity of the tubercle bacillus for some time. The dust inseparable from the teasing out of old stuffings is avoided by the use of a well-protected carding machine which has a fan and ducting to remove the dust outside the shop.

(3) *Boot Repairs.*—A finishing machine relieves the heavier work in this department.

(4) *Decorating.*—The work done by these men is almost entirely internal painting.

(5) *Poultry Farm.*—The work on a large poultry farm is at times rather heavy, especially as the work must continue over the week-ends.

(6) *Gardening.*—The settlers do no heavy digging. Other settlers are employed on clerical work, one as a porter and one as a lorry driver.

Extent of Disease.

Of these 26 men, 12 have had positive sputum and 14 have negative or no sputum at all. The anatomical extent of the disease compared with the time of sickness is shown in Table II.

TABLE II.

—	Diseased lung.				
	1 lo.	2 lo.	3 lo.	4 lo.	—
T.B. minus cases ..	2	8	2	2	14 men.
Total time of sickness in weeks	0	15	5	3	23 wks.
T.B. plus cases ..	0	0	6	6	12 men.
Total time of sickness in weeks	0	0	17	64	81 wks.

lo = lobes.

Working Hours and Absenteeism.

The total number of possible hours which these 26 men could have worked is 182,521 hours, and the total hours of work lost by these men through sickness due to tuberculosis was 4066. This represents 2·2 per cent., which would compare favourably with most communities. During the year January, 1929, to January, 1930, the carpentry department was employing 13 settlers. The total possible hours which these men could have worked during the year was 21,146. There were lost from sickness due to tuberculosis 1616 hours (7·2 per cent.), and of this number 1298 hours, or 80 per cent., were lost by one man, who is still under treatment.

Nine of the settlers have gained weight, the average gain being 7¼ lb.; 17 of the 26 have lost weight, the average loss being 5¼ lb.; 22 are working seven hours per day, and the remaining 4 eight hours per day. These men on eight hours per day are working under the same sheltered conditions as the men on less hours, and are not comparable with men working eight hours per day in the outside world. They are never pressed to work to their utmost capacity, not are they in competition with robust healthy workers. All the men are under constant medical supervision, and any failure in health is soon noted and treated, and, if necessary, the man's work is made easier for the time being; in this way long breakdowns have been avoided.

Should a man break down for a short period he is immediately admitted to the sanatorium and given the benefit of institutional routine and nursing, and his family is assisted, if necessary, from a fund provided for that purpose. This immediate institutional treatment, even for quite a short period, is of the utmost value in preventing serious relapses.

The goods for sale are being standardised as much as possible so that repetition work can be introduced. This is found advantageous from the point of view of the health of the worker, as well as for commercial reasons. Certain repetition work is suitable for unskilled sanatorium patients as part of their occupational therapy.

Discharged Settlers.

The industrial history of the five men who left the settlement is as follows :—

1. Married. Sputum-negative case; two lobes involved. Was a settler for two years as caretaker at hostel, where he worked seven hours per day. He had no breakdown.

2. Single. Sputum-negative case; two lobes involved. Was a settler four years. Worked in firelighter department seven hours per day for two years; afterwards drove Ford van for two years. He had no breakdown.

3. Single. Sputum-negative case; two lobes involved. Was a settler for three years. Worked seven hours per day in piggery for one year. When piggeries were closed down was employed in firelighter department for seven hours per day for two years. He had no breakdown.

4. Single. Sputum-positive case; three lobes involved. Was a settler for 18 months. Worked five hours per day in boot-repairing department. Broke down for three months and decided to return to his people. This man's habits were not conducive to good health.

5. Single. Sputum-negative case; two lobes involved. Was a settler for 16 months. Worked seven hours per day in carpenter's shop. Decided to return to his people. Had no breakdown.

Fatal Cases.

The three deaths among the settlers occurred in 1927. All three were rather advanced cases; two had positive sputum and one had a negative sputum. They all lasted 18 months as settlers before their final breakdown. Two had never worked in the settlement for more than five hours per day, and the third worked seven hours per day. They all had short relapses from a week to a month before their final breakdown. These cases were all rather hopeless from the first, but they were made happier by being part-time employed during the last months of their lives. They lasted longer and at less expense to the community than they would have done in the outside world, and were not a source of danger to the general public.

INVESTIGATIONS ON DIET IN HEALTH AND DISEASE.

RESEARCH SUBSIDISED BY THE MEDICAL RESEARCH COUNCIL.

A CONSIDERABLE proportion of the research work now in progress under the auspices of the Medical Research Council is concerned with the relation of variations in diet to the maintenance of health or the incidence of disease. The discovery of vitamins has enmeshed dietetic experts in a maze which grows increasingly complex as the number of known accessory food factors increases. But apart from these, other dietetic questions—for example, those of sugar hunger and sugar tolerance, of the desirability of pushing or withholding protein in the diet of patients with kidney lesions, of fat indigestion, especially in children—are assuming greater and more precise importance in clinical medicine than ever before. It is, therefore, appropriate to call attention in this concluding notice of the Medical Research Council's annual report for 1928–29 to those researches carried on in all parts of Great Britain which are directly or indirectly concerned with diet.

Relation of Diet to Infection.

At Sheffield Prof. E. Mellanby and Dr. H. N. Green have been investigating the relationship of diet to infection.

It was found that when rats were fed on a diet devoid of vitamin A they almost invariably died with septic infections. When vitamin A was present in the food these infections did not develop, while the administration of foodstuffs rich in vitamin A to animals already infected often brought about complete recovery. Vitamin D did not have this preventive action; indeed it often appeared, if given unbalanced, to hasten illness in young animals, probably because it brought about more rapid growth and a quicker exhaustion of the stores of vitamin A already present in the body.

Consideration of the average diet consumed by the population under modern conditions suggested that similar influences might play some part in human resistance to bacterial infection. As a clinical study it was decided to investigate the effect of vitamin A preparations in puerperal septicæmia. This disease was selected because its case mortality is so great that with comparatively few tests a rapid inquiry could be made into the truth of the hypothesis. Although the number of cases investigated is still small, the results suggest that a definite increase of resistance to this disease is given by intensive vitamin A therapy.

So far as puerperal sepsis is concerned, the results tend to emphasise the importance of the condition of the mother before infection rather than the part played by the midwife and doctor, a view which is on the whole opposed to the present trend of thought. If, for instance, it is possible by dietetic therapy to cure cases of puerperal septicæmia, it ought to be even easier to prevent this and other forms of sepsis by proper feeding of the mother during the puerperium. To obtain evidence on this point, an investigation has been begun at the out-patient department of the Jessop Hospital, Sheffield, with the assistance of Dr. Doris Pindar. The small amount of evidence so far obtained supports this hypothesis.

Dr. Green and Prof. Mellanby are also conducting animal experiments to gain insight into the mode of action of vitamin A in septic conditions, and to find the part played by other food elements in the resistance of the body to infection. Further observations on a larger scale are contemplated to decide whether the same influences apply to other infections such as pneumonia, tuberculosis, and rheumatic fever.

Dr. W. M. Roberts has determined the effects of oils on secretion and motility of the stomach wall.

Nutritional Disorders in Infants and Young Children.

Dr. Stanley Graham and Dr. Noah Morris, working in Glasgow, have been investigating the disturbances of acid-base equilibrium in infancy and childhood, with special reference to congenital hypertrophic pyloric stenosis and cyclical vomiting. Dr. Morris and Dr. Olive Macrae are studying the mineral and fat metabolism and the variations produced by modifications of dietary in cœliac disease; while at Birmingham, Dr. Leonard Parsons, with Dr. S. H. Edgar, Miss E. M. Hickmans, and Miss M. S. Esselmont, is investigating the biochemistry of this and other diseases in children. The effects of variation in the diet on a group of children in the convalescent stage of acute rheumatism has also been studied.

Dr. Helen Mackay and Miss L. Goodfellow (London) have shown that the anæmia common in breast-fed infants is a nutritional anæmia like that already studied in artificially-fed infants. It appears that resistance to infection can be increased by the regular administration of a suitable iron salt and by the consequent prevention of this type of nutritional anæmia.

As a result of work at Guy's Hospital and elsewhere Dr. A. A. Osman has defined a condition of debility in children which is associated with acidosis, and is a milder degree of the syndrome known as "cyclical vomiting." This may be quickly overcome by giving sugar.

Studies of Growth.

At University College, London, Dr. H. A. Harris has been unable to substantiate the claims made for the superiority of irradiated ergosterol over cod-liver oil in the treatment of rickets. He holds that vitamin D can influence calcification in cartilage, but that true osteogenesis is determined by vitamin A alone. A study of susceptibility to perversions of growth has been made in the child and in the rat. The results indicate that all dietetic experiments on rats of more than 30 days old at the beginning of the experiment are unreliable, because by the fifth week the rat has ceased to grow at such a rate as to permit of the onset of acute rickets.

National Dietaries.

Dietary studies are being made at Glasgow by Prof. E. P. Cathcart, assisted by Mrs. A. M. T. Murray and Miss M. Shanks. These studies consist in the analysis over a suitable period of the diets in use in a series of typical households in various towns. Data from St. Andrews have now been completely analysed, and the results obtained are definite and informative. Good progress has also been made with the analyses of Cardiff and Reading diets, and it is hoped the

study will be completed by the investigation of one or more towns in the northern industrial area, probably in Lancashire or Yorkshire. At King's College Hospital, London, Dr. R. A. McCance, Dr. R. D. Lawrence, and Mr. H. L. Shipp have completed an analysis of carbohydrate foods, differentiating those available and unavailable for the purposes of metabolism, and have begun a similar investigation into the nutritional value of other cooked foods, especially meat and fish.

Trials of the relative values of brown and white bread have been made with rats by Prof. V. H. Mottram and Dr. G. A. Hartwell, and the results have been published in our columns. Dr. Hartwell has continued her work on synthetic diets.

Iodine in Foodstuffs.

In Aberdeen Dr. J. B. Orr, with the assistance of Miss G. L. Stuart and Mr. N. L. McPherson, has continued work on the relationship of iodine in foodstuffs to the distribution of goitre, further samples having been collected from selected English and Scottish areas. A review of existing information on iodine in nutrition, by Dr. Orr and Dr. Isabella Leitch, has been published.

Diet in Tetany.

At St. Bartholomew's Hospital Dr. G. C. Linder and Dr. C. F. Harris have investigated the influence of parathyroid extract, thyroid extract, and calcium salts in cases of tetany after operations on the thyroid gland. In tetany associated with steatorrhœa, the influence of fat in the diet and of irradiated ergosterol have been studied, and a preliminary report has been made. Satisfactory therapeutic results have been obtained.

Antiscorbutic Activity.

The Council have again received a grant from the Empire Marketing Board for the investigation of the vitamin content of various Empire food substances. The work is being done by Dr. S. S. Zilva at the Lister Institute with five assistants.

Continuing the chemical investigation of the antiscorbutic factor in lemon-juice, Dr. Zilva has studied the causes of the spontaneous inactivation of the vitamin.

Experiments on the relation to maturity of the antiscorbutic activity of citrus fruits have been begun. A group of orange trees near Jaffa has been set aside for this purpose. Consignments of this uniform yield were sent periodically during the season and examined chemically and biologically. Details of the history of the trees, such as age of stock, budding, soil, cultural treatment, climate, and conditions of picking, are known. Grape fruit from British Honduras has been similarly collected.

Dr. L. J. Harris, with Dr. E. W. Fish, is studying the effects upon tooth-structure of long-continued slight shortage of vitamin C.

The Fat-soluble Vitamins.

The inquiry into the A and D vitamin contents of Dominion dairy products, and the influence upon them of environment, has been extended to Australian butters.

With Captain Golding, of the National Institute for Research in Dairying, Reading, a study of factors causing destruction of the fat-soluble vitamins in milk has been begun by Dr. Zilva. The influence of a diet deficient in fat-soluble vitamin on the development of sensitivity to tuberculin in rats infected with *B. tuberculosis*, is being studied with Dr. H. Schütze.

Miss E. M. Hume, with Miss Henderson Smith, has studied the calcification of the bones of rats irradiated with ultra-violet light and kept on a diet as free as possible from ergosterol. At present it does not seem that calcification is limited by the absence of ergosterol from the diet.

Prof. J. C. Drummond, at University College, London, from a chemical examination of the vitamin A fraction of certain liver oils, concludes that this vitamin must form a very minute proportion of even the most active concentrates that have as yet been prepared. With Prof. Heilbron, of Liverpool, feeding tests are being made by Prof. Drummond with synthetic preparations which might be suspected of being related closely to vitamin A, and might exhibit its activities.

In the new Nutritional Laboratory at the Field Laboratories, Cambridge, Dr. L. J. Harris and Dr. T. Moore have studied the effects of giving massive doses of irradiated ergosterol. Evidence has been got that the ill-effects are due to overdosage with vitamin D itself, and not to any impurities produced during the irradiation.

With Dr. C. P. Stewart, of Edinburgh, Dr. Harris has found that experimental hypervitaminosis D in rabbits or rats is shown by raised blood phosphate or blood calcium, or both, and this state is in contrast with that observed in avitaminosis D (rickets). Mr. Innes, collaborating here, finds that the microscopic changes are the opposite of those seen in rickets.

Dr. Moore has confirmed the results of Swedish workers, who found that the pigment carotene, even after many recrystallisations, invariably has intense vitamin A activity when given in minute doses under defined dietary conditions.

Carotene and the classical vitamin A of cod-liver oil are not identical; but carotene may be a precursor of the classical vitamin A, and capable of conversion into it in vivo.

The carrot has been found to be a much richer source of vitamin A activity than was hitherto supposed. On a basis of dry weight the carrot root must approach cod-liver oil activity; and on account of its ready accessibility and cheapness this fact may have economic importance. Dr. Moore has also tested carotene for vitamin D, with quite negative results. This pigment may be a useful means for giving vitamin A, in nutritional experiments, without the vitamin D which so often accompanies it in foods.

The Minimum Nutritive Requirements of the Mammal.

Experiments have been made during the year at University College with the object of deciding what are the minimum nutritive requirements of the mammalian organism, as represented by the rat. The fact that fats are not essential constituents of the diet has been confirmed. Fat in the diet may change the demands of the organism for one or all components of the vitamin B complex, and failure to recognise this has led other workers to attribute an essential rôle to the fats as such.

Two voluntary workers, Miss F. J. Hargreaves, of Toronto, and Miss Clay, have joined in studies of the relation of animal appetite to vitamin requirement, while Dr. A. N. Drury, with Dr. C. W. Carter, of Oxford, has been investigating a cardiac irregularity noticed in pigeons fed upon polished rice.

The Water-soluble B Vitamins.

At the Lister Institute Dr. Margaret Fixsen, working under Dr. Harriette Chick, is investigating the part played in the metabolism of nitrogen by the water-soluble B vitamins.

It is probable that the presence or absence in the diet of the recently discovered heat-stable vitamin B_2 has influenced the results obtained for the "biological values" of various proteins. Some of these biological values are being redetermined by experiments in which the animals are supplied with an adequate ration of all vitamins at present known.

At Oxford Miss Vera Reader and Mr. H. W. Kinnersley have been working with personal grants on the yeast vitamin B_1 (torulin).

Mr. Kinnersley and Prof. Peters have much simplified their methods of obtaining the most active torulin concentrates, so as to work upon a large scale. By studying the changes in the brains of birds with lack of vitamin B_1 Mr. Kinnersley and Prof. Peters conclude that this want interferes with the oxidative removal of lactic acid in muscular activity, and agree that torulin is specifically concerned with carbohydrate changes in the body.

Miss Reader has again worked upon the growth-promoting activity of the purer torulin concentrates, and she has found a third factor in this very complex substance. This factor, B_3, is thermolabile, and has a curative effect on pellagra. Continuing to investigate the abnormally enhanced effect produced by impure extracts of torulin, Miss Reader has found that the addition of mannitol to a pure extract specifically imitates this abnormality. The separation of the two substances which together appear to be responsible for the physiological effects of concentrates of vitamin B_1, is being made on a large scale (so as to get quantities enough for adequate purification) by Dr. B. C. Guha and Dr F. L. Pyman.

Miss R. Stern, working at the National Hospital, under the direction of Dr. J. G. Greenfield, has completed her study of the effects of diets deficient in vitamins B_1 and B_2 on the nervous system.

Influence of Diet on Dental Disease.

Mrs. M. Mellanby, at Sheffield, has continued her work on the relations between the original structure of the periodontal tissues and their liability to infection, and between diet and liability to infection under normal and abnormal conditions of structure, and has also, with Dr. C. Lee Pattison, obtained confirmatory evidence of the healing effects of vitamin D upon active dental caries in children. She is supervising an inquiry at Birmingham into the influence of diet on the development and extension of caries in the teeth of children.

Dr. J. R. Marrack (London Hospital) is investigating the influence of an increased intake of vitamin D, and of added calcium lactate and cod-liver oil, on the calcium content of the saliva.

At Sheffield Dr. C. G. Imrie and Miss M. Hirst have been observing the effects of diet free from creatine, and of the oral administration of creatine were also observed. Other studies have been made of the creatine and phosphorus in the muscles and in the blood and urine after giving creatine in food.

Physiology of Digestion.

Under the direction of Dr. G. A. Harrison at St Bartholomew's Hospital, Miss F. K. Herbert is studying the range of variation of the sugar tolerance in normal persons. Dr. R. J. Brocklehurst, at University College, London, has been investigating the gastric secretory response to food in animals.

Liver in Pernicious Anæmia.

At Edinburgh Dr. Stanley Davidson with Prof. Gulland have made further studies in confirmation of the work of Minot and Murphy showing the efficacy of liver treatment in pernicious anæmia. Examinations of the intestinal bacterja in this disease have shown quantitative increase above the normal, but no constant qualitative abnormality; no correlation has been found between increase of intestinal bacteria and the clinical condition.

Conclusion.

The Council announce that the trustees of the late Sir William Dunn have given £6000 for the erection of a nutritional laboratory upon a site at the Field Laboratories, Cambridge, provided by the University. This laboratory is so placed and designed as to give the most hopeful conditions for investigation in this increasingly important field of medicine. The research work here will be brought into close relations on the one side with the University departments for the primary medical sciences and on the other with the nutritional work being done in the interests of agriculture and veterinary medicine.

TORBAY HOSPITAL.—The report for the first complete year of the new hospital states that 1668 in-patients were admitted, and that there were 4266 new out-patients. The average daily cost for in-patients (146 beds) was 7*s.* 7*d.*; the average period of residence was 24·21 days.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

The Question of Reciprocity.

THE recognition of Indian Medical degrees by the British Medical Council is now in imminent danger of being withdrawn. Following the Government's failure to form an All-India Medical Council the General Medical Council was to have been pacified and the gap to have been filled by the appointment of a commissioner of medical qualifications in India. But the Legislative Assembly have refused to make this appointment. The attitude taken by the medical press here is that the General Medical Council are being dictatorial and that any attempt on the part of India to meet their wishes would be undignified. They demand that, if recognition of Indian degrees is refused, India should refuse to recognise British degrees. I understand that the question of an appointment of a Commissioner is to be dropped but that the Government is determined on the formation of an All-India Medical Council in the near future.

Proposed Central Research Institute.

The scheme for the establishment of a new Central Research Institute has received a severe set-back. The Standing Finance Committee of the Central Government have passed the annual grant to the Indian Research Fund Association only on condition that the whole Dehra Dun scheme is reconsidered by a committee appointed for the purpose. Opposition to this scheme has come from an entirely new quarter. The money which has been ear-marked for the last ten years for the building of this institution has now come to be looked upon as part of the capital of the Indian Research Fund Association, and expenditure from this capital sum will naturally curtail the research programme of the Association; the scheme was, therefore, not popular amongst research workers in India. It has always been considered by a section of the research workers that the new Institute should be located within easy reach of clinical material in one of the large Presidency towns. Some of the opposition to the localisation of the Institute at Dehra Dun was overcome when it was pointed out that this Institute would be devoted mainly to basic research and that, as there was already a suitable building at Dehra Dun which could be obtained without cost, the only expenditure would be a comparatively small sum for making certain alterations and additions. Eyebrows were lifted slightly when it was stated that this "small sum" would amount to six lakhs of rupees, and considerable sympathy with the scheme was lost when it was rumoured that the original sum mentioned was a gross underestimate and that the total expenditure on bricks and mortar alone would be more than twice this sum. Research workers feel that they have never been taken into the confidence of the Government over this scheme. The Fletcher Committee report was not circulated freely until about a year after its publication, and nothing about the additional expenditure at Dehra Dun was told to the All-India Research Workers Conference held at Calcutta last December. The need for a central Institute is admitted and most research workers are reconciled to its localisation at Dehra Dun, provided the grants which the provincial institutions—such as the Haffkine Institute in Bombay, the School of Tropical Medicine in Calcutta, and the King Institute in Madras where the more practical research problems can be tackled—have received from the Indian Research Fund Association during the last few years are not cut. Present opposition appears to be of a political nature.

Standardisation of Drugs.

At present there is no legislation which makes it necessary for drugs offered for sale in India to be

of any given standard or even to be what they purport to be, provided they are comparatively harmless. The matter has recently been taken up by the Central Government and a provision of Rs.1,10,000 has been made for the appointment of a committee to inquire into the question of importation, manufacture, and sale of medicines and drugs of impure quality or defective strength. I understand that the inquiry will be limited to drugs in common use in scientific medicine, and will not include those used in the so-called indigenous systems of medicine.

Recruitment for the I.M.S.

When this question came up before the Legislative Assembly in January one speaker urged that the time had now come for the revival of the entrance examination; the examination should, he thought, be held in India. This suggestion did not receive much support, but an amendment that the competitive examination should be revived and should be held in India and in England simultaneously received the support of the European group in the Assembly. The Government spokesman pointed out that before the war, when recruitment was solely by examination, the proportion of European to Indian admissions was 7 to 1, but that at present it was 2 to 1. He said that this proportion was not final and could be altered if a prima facie case for alteration were made out, but he considered that the resolution, in so far as it involved an immediate radical alteration in the organisation of the service, was premature. Eventually a resolution following the lines of the amendment was carried without a division.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Proposed Reform of the Vaccination Laws.

THE German Federal Health Council in their last meeting have recommended the Government to modify compulsory vaccination. The proposals are that: (1) conscientious objection of the parents should be considered; (2) the number of children to be vaccinated by any particular medical officer should not be too large, in order to allow him to examine them thoroughly to ascertain their constitutional fitness for vaccination; (3) forcible prosecutions by the police to enforce vaccination should be altogether abolished. If a vaccinated child has been injured by vaccination the State should be liable to pay damages. The decision to make these recommendations was taken on the authority of Prof. Schlossmann, the well-known specialist for children's diseases in Düsseldorf. He stated that 28 cases of post-vaccinal encephalitis were recorded in 1928—a number very small compared with the two and a half millions of children vaccinated in the same year. He was also of opinion that without vaccination the number of cases of encephalitis as a sequel to small-pox would certainly be greater. But post-vaccinal encephalitis has afflicted healthy children and has thus caused much sorrow to their parents. Cow-pox is not a local disease as was formerly believed. He described himself an absolute adherent of vaccination, but without coercion.

Notification of Diphtheria.

A medical man was lately prosecuted because he had not notified a case of diphtheria in a child who eventually died from the disease. He pleaded that he had not been certain that the child suffered from genuine diphtheria and had thus not felt obliged to notify the case. The court found him not guilty. According to the provisions of the Infectious Diseases Act (Prussia), a case of diphtheria, measles, or scarlet fever must be notified by the medical attendant within 24 hours of ascertaining the nature of the disease. If the doctor was not aware that the patient was suffering from an infectious disease he cannot be punished. The court had not to decide whether by better care he might have arrived at a right diagnosis. According to the Federal Act concerning the prevention of epidemics, including small-pox, plague, cholera, typhus, and other diseases of an extraordinarily grave and infectious character, medical men have to notify at once even suspected cases, and a medical man omitting such notification would be liable to prosecution. But that does not apply to diphtheria where notification is compulsory only after the diagnosis has been made.

Surgical Complications of Dengue Fever.

Dr. Toole reports in the *Archiv für Klinische Chirurgie* on surgical complications which occurred during the great epidemic of dengue fever in Greece. The complications affected 2000 of 650,000 patients and happened during the course of the disease or during convalescence. Among them were infectious processes produced by staphylococci and sometimes by streptococci, furunculosis, phlegmons, and parotitis. They were due partly to the fact that the resistance of the patients was diminished by the illness, but partly to external circumstances. Thus it happened that, owing to the great pressure on the medical and nursing staff, in some cases injections were not made quite aseptically. Dr. Toole does not connect dengue fever with inflammation.

The Methods of Valentin Zeileis.

The activities of Valentin Zeileis, recounted by your Austrian correspondent, have aroused interest here, for Gallspach, where he has acquired an enormous practice, lies near the German frontier. At a recent meeting of the Berlin Medical Society Prof. Lazarus, who has visited Gallspach, gave an account of his methods. According to him, Zeileis brings a Geissler tube near a patient, telling him that, when the tube is near an affected organ, the rays within the tube become more brilliant and that he is thus able to diagnose the nature of the disease. For every disease he applies the same treatment—high-frequency currents, radium and Rontgen rays, and light treatment, in that order. He treats 100 patients simultaneously in a great hall; they come three times a day for at least three weeks, sometimes for several months. If he confined his attention to hysterical patients, who are influenced by the flash of the rays, the smell of ozone, and by their own faith no harm would be done, but he and his school pretend to cure organic troubles too, and this keeps genuine patients from consulting medical men. Prof. Lazarus has reported various catastrophes that have followed this treatment. The position is complicated by the fact that Zeileis by his mass methods is able to attend daily from 1000 to 2000 patients. The whole neighbourhood thus profits from his clinic. Several hotels have been built in the small country town of Gallspach and motor-buses are in operation. The mayor and the peasants resent any doubts thrown on the efficacy of the treatment because of the prosperity brought to the town thereby. Prof. Lazarus's report has been published not only by the medical journals, but by the great Berlin daily newspapers too; its effect, however, was contrary to that expected by its author. The report has acted as propaganda; a Zeileis institute has been opened in Berlin, where the methods of the master are applied, and Zeileis has threatened to bring an action for slander against Prof. Lazarus. The Austrian authorities have left him undisturbed, possibly for financial reasons, and possibly because he has been covered by the name of his son who is a qualified medical man. He has, moreover, declared that if he is prosecuted he will go over the neighbouring Bavarian frontier and settle there, since unqualified practice is not illegal in Germany. There is obviously little prospect of success for the struggle against unqualified practice while the public prefers mystic proceedings to scientific methods.

[1] THE LANCET, Jan. 25th, p. 196.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

For Public Health in France.

Two creations have just been made in France for public health. One is the *Ministère de la Santé Publique*, the other is the *Parti Social de la Santé Publique*. Of the former there is little to say, for the Minister called by Mr. Tardieu is Mr. Désiré Ferry, who is not a member of the medical profession, and is actually waiting for a staff and credits. The second creation has more interest at the moment, because no one knows what it will become in the future. The party for public health has been organised just like any political party. Its head is Senator Justin Godart, who was under-secretary to the military sanitary service during the war, where he did praiseworthy work. The party proposes to have sections all over France, and to submit candidates for election. But that is a trick to enable it to post bills on the reserved hoardings during electoral campaigns, and so oblige the ordinary candidates to consider public health questions. The first assembly of the party gathered a goodly concourse of people, and I have been told that subscriptions are coming in.

Central building of the Institute for Cancer Research of the Paris Faculty of Medicine at Villejuif.

The New Institute for Cancer Research.

Since 1921 Prof. Roussy has been head of the cancer centre for the Paris suburbs, which I have already described. That centre has grown so quickly that it can no longer be contained in its present buildings. Two years ago Prof. Roussy negotiated an agreement between the State, the Paris administration, and the faculty for the foundation of a modern institute. The laboratory department of this institute was inaugurated with a great ceremony by the President of the Republic recently. It is composed of six groups of special laboratories, plus a post-mortem service. At the same time the President laid the first stone of the clinical section that is still working in the old pavilions. The laboratories have been in occupation for two months and are considered to be the best fitted in Europe for the present.

The Leeuwenhoek-Vereeniging.

Invited for the inauguration of the institute, the members of the Leeuwenhoek-Vereeniging held their third scientific meeting. This association for the study of malignant tumours was created in 1922 at Amsterdam, under the presidency of Prof. Rotgans, and the second meeting was held two years ago in London. The British members included Dr. J. A. Murray, Dr. H. J. B. Fry, Dr. E. L. Kennaway, Dr. A. Leitch, and Dr. W. Cramer. The chairman was Prof. Roussy, and the secretary Prof. Deelman (Amsterdam). There were also present Drs. Blumenthal (Berlin), Bierich (Hamburg), Borrel (Strasbourg), Lipschütz (Vienna), Maisin (Louvain), Teutschländer (Berlin), de Vries and Waterman (Amsterdam), Askanazy (Geneva), Dustin (Brussels), Firkel (Liège), Fichera (Milan), Moller (Copenhagen), and Pentimalli (Naples).

Dr. O. Guéniot, who is 98 years of age, has received from his fellow members of the Academy of Paris a medal to commemorate his fiftieth year of membership.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Child Welfare Legislation.

SINCE 1922 Federal aid has been available in the States under provisions of the Sheppard-Towner Act. In many of the poorer States it has proved almost indispensable to programmes of health education with especial regard to maternity and infant welfare. The Sheppard-Towner Act provided aid on the basis of $5000 annually to each State and an additional $5000 if matched by State funds. This was for five years only, but in 1927 the provisions of the Act were extended for an additional two years. The Act terminated June 30th, 1929. On April 18th, 1929, a Bill was introduced into Congress by Senator Jones and Representative Cooper which was in most respects identical with the Sheppard-Towner Act, except that no outright grant was offered to the States. It provided a million dollar appropriation to be administered by the Children's Bureau, which had administered the previous Act. This Jones-Cooper Bill was supported by all the child welfare organisations. These bodies, as well as some women's organisations, including the important League of Women Voters, had been favourably impressed with the working of the Act. It was approved by the American Medical Association, but with perhaps less confidence than was the original Sheppard-Towner Act, for medical societies in the poorer States are by no means solidly in agreement with the central administration. Yet the Jones-Cooper Bill was never voted. Representative Cooper has now introduced a substitute Bill which is unlikely to satisfy anyone. The appropriation is greatly reduced and the administration handed over to the Public Health Service. It has been questioned whether, under the provisions of this Bill, any of the money will be spent directly on maternity and infancy work. President Hoover is known to take great

personal interest in child welfare work, but it is clear that he cannot control the actions of Congress unless he has behind him a solid and vocal body of public opinion. However, the women's organisations are efficient and we may expect to hear from them in the near future.

Health in Prisons.

A series of prison mutinies has given impetus to the movement for psychiatric examination of convicted offenders. At a recent hearing of the New York State Crime Commission this policy was repeatedly emphasised. A suggestion for the establishment of a special court for boys between the ages of 16 and 18 was approved by a number of the commission. The need for relieving idleness among prisoners was also discussed. The situation in New York is certainly not worse than in other parts of the country if we are to believe the findings of a nation-wide survey of Federal and State penal institutions. More than 100 institutions are reviewed in the report of this survey, the health and medical aspects being presented by Dr. Frank L. Rector, the executive secretary of the Chicago Medical Society. "With few exceptions," he says, "the prison hospitals are greatly understaffed." Seldom is the physician also the administrative head of all health and hospital activities. The equipment in many prison hospitals leaves much to be desired. "Health education is badly neglected." It is recommended that actively tuberculous prisoners be not paroled unless adequate care by relatives is assured, but be transferred to a suitable institution for treatment. Recommendations are also made for the segregation of drug addicts and of the insane, as well as for the improvement of prison diet and of recreation facilities.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Death of Sir John Fagan.

THE recent death of Sir John Fagan, at Portarlington, removes from Irish medical circles a well-known public man. He obtained his medical qualifications from the Irish Royal Colleges no less than 65 years ago, and proceeding to the Fellowship of the Royal College of Surgeons in Ireland in 1874, must have been among the oldest, if not actually the senior, Fellow at the time of his death. He was for many years surgeon to the Royal Victoria Hospital, Belfast, but retired from practice in 1897 on his appointment as Inspector of Reformatories and Industrial Schools. Some years later he was appointed to the Prisons Board, and on the cessation of this office he went to live at Portarlington, where he died.

Royal Victoria Hospital, Belfast.

Captain H. G. H. Mulholland, Speaker of the House of Commons of Northern Ireland, presided at the 137th annual meeting of the Royal Victoria Hospital, held in the King Edward VII. Memorial Hall of the institution on March 28th. The annual report showed that during 1929, 6237 patients were treated in the wards, and extern patients numbered 55,090. The cost of running the hospital for the 12 months came to £61,643, against which the revenue was £59,812. The deficit is small, while it is of deep significance that important developments are taking place. The building of a new Maternity Hospital has actually begun, although £50,000 of the £130,000 required is still lacking. A scheme for a pay patients' department for people of moderate means—an urgently needed reform—is being held up pending the erection of a new nurses' home, but there is every hope that both will materialise. A fine new children's hospital is being erected close to the Royal Victoria, and the proposed housing of the Pathological and Bacteriological Department of the Queen's University in a new institute in the same grounds shows that the great scheme of having the whole medical school in the closest proximity to the clinical hospitals is no longer a dream but is taking concrete shape.

Queen's University of Belfast.

At the spring graduation ceremony on March 28th the following degrees in the Faculty of Medicine were conferred :—

Doctor of Medicine—Samuel Hayes and Jane A. D. Maclean.
Bachelor of Medicine, Bachelor of Surgery, and Bachelor of Obstetrics—James H. Colhoun, Margaret M. Conway, Charles E. Emerson, George R. Garvin, Stanley B. Hughes, Robert J. Huston, William M'Bride, Henry J. M'Shane, Gordon F. Magurran, Nora Maybin, Phyllis E. Minford, Hector F. Northey, Thomas H. W. Ritchie, Cecil V. Stevenson, James B. Young, and Mary C. Young.
Diploma in Public Health—Letitia M. Allen, Eric Blackstock, William F. Lyle, Anna R. Park, and Thomas Purce.

Robert Harper Sproule, M.D., M.Ch.

Dr. R. H. Sproule, whose death took place at Killyleagh, County Down, on March 26th, was born in 1855 in County Tyrone, and took his university courses in Arts and Medicine in the Queen's College, Belfast, and graduated M.D., M.Ch., in 1881. He was appointed dispensary doctor for Killyleagh in 1888, and held that post until four years ago. Known and respected throughout a large part of Down his resignation from dispensary duties furnished his numerous friends with an opportunity of paying him a well-deserved presentation. Dr. Sproule had a remarkable memory. He could tell the birthday of every boy and girl born in his district during his period as medical officer. He was a noted "sermon taster" and woe to the clergyman who preached an old sermon in Second Killyleagh Presbyterian Church, as Dr. Sproule could repeat word for word any sermon heard for years back and could give the date of its delivery. He was a lover of all kinds of sport, especially cricket; ran the local football club, and presented all the necessary equipment to the boys. His memory will linger for a long time by the lovely shores of Strangford Lough, where his long life was spent in the unselfish service of others.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 22ND, 1930.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 361 (last week 433); scarlet fever, 2440; diphtheria, 1620; enteric fever, 55; pneumonia, 1462; puerperal fever, 47; puerperal pyrexia, 115; cerebro-spinal fever, 16; acute poliomyelitis, 3; encephalitis lethargica, 10; dysentery, 2; ophthalmia neonatorum, 115. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on March 25th–26th was as follows: Small-pox, 545 under treatment, 23 under observation (last week 587 and 26 respectively), scarlet fever, 2137, diphtheria, 2738, enteric fever, 18, measles, 1078, whooping-cough, 78, puerperal fever, 22 (plus 12 babies); encephalitis lethargica, 123; poliomyelitis, 1; "other diseases," 30. At St. Margaret's Hospital there were 12 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London there was no death from small-pox, 5 (1) from enteric fever, 119 (67) from measles, 16 (5) from scarlet fever, 35 (6) from whooping-cough, 40 (13) from diphtheria, 56 (16) from diarrhœa and enteritis under two years, and 67 (10) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London were reported from Reading, Birmingham, Bolton and York, each 1. The fatal cases of measles were concentrated at Manchester, 11; Sheffield, 8; West Ham, 5. (Glasgow also reported 15 deaths.) Whooping-cough claimed 8 victims at Birmingham; diphtheria 5 at Liverpool. Diarrhœa accounted for 6 deaths at Manchester and 4 at Liverpool. The highest figures for deaths attributed to influenza were Birmingham, 4; Stoke-on-Trent, 3. The monthly statement of deaths from small-pox in England and Wales for February contains one death assigned to Meltham U.D. (Yorks, W.R.).

The number of stillbirths notified during the week was 319 (corresponding to a rate of 48 per 1000 births), including 63 in London.

Correspondence.

"Audi alteram partem."

ATHLETICS IN SCHOOLS.

To the Editor of THE LANCET.

SIR,—I have read Dr. Lempriere's address and the discussion which followed its delivery in THE LANCET of March 29th with considerable interest, and must say that my experience has led me to agree with many of his conclusions. Unfortunately, I did not have the privilege of being present at the discussion at the Hunterian Society, but there are some points which, to my mind, cannot be too strongly stressed. The competitive spirit of athletics tends to be given too prominent a position in schools at the present day, and it is this concentration on the competitive factor, and the "cock-house" spirit, that forms the potential danger. Do we not all know how the Cup-tie keenness ruins hospital football and reduces the standard of play?

The recent realisation of the advantages of athletics as a means of sublimating that inherent dynamic energy that lies dormant in each and everyone of us has given sport an undue prominence in the public eye. School authorities have seen that by directing this energy along athletic channels they can obtain for it an outlet that prevents it from being manifested as mischief or immorality. Compulsory sublimation, however, is unsound, and for that reason I am definitely against compulsory games.

Dr. Simey strikes the correct note when he says that "spontaneity in recreation is essential," and in considering school games I would focus the attention, not on the word "athletics," meaning "contest," but on the word "recreation," meaning a refreshing or restoring of energy, and ask sports masters and others in authority to look upon the outdoor activities as an opportunity for the recreation of energy rather than as an expenditure to the limit of exhaustion. If the boys are thereby taught the right use of leisure it will be of lasting benefit to them all their lives, and we shall not have the tired and harassed business man dashing off at the week-end to take part in a strenuous golf competition which only leaves him still more tired and harassed at the end. The long road run, the cross country and competitive steeplechase are forms of recreation to be deprecated. Much greater benefit is derived from a medium course of one to three miles covered by a series of alternating hundred yards run and hundred yards walk, with an occasional fifty yards sprint. The efforts in such cases are short and sharp, monotony is avoided, and periods of comparative rest are provided.

Rowing is another sport that requires careful consideration. It is particularly fascinating, but unfortunately certain muscles are undoubtedly overworked at the expense of others, while the return flow of blood from the lower half of the body is not adequately provided for. Provided the individual is of good physique and sound constitution he will derive benefit from rowing, but otherwise he may do himself more harm than good. Certainly the middle-aged man, formerly a rowing man, is a distinct medical problem at the present day, though it is difficult to say how much of his disability is due to the rowing itself or to the faulty methods of training that were in vogue in the last century.

Rugby football, in that it requires a considerable "amount of contortional ability," would seem to stand fairly high in Captain Martin Flack's classification, but I think that it should not be widely indulged in by boys of preparatory school age. Its increasing popularity with the public of recent years has led to an outcry for speeding up the game and making it more spectacular, but the Rugby Union very wisely are averse to this, and base their legislation by visualising the normal schoolboy as the standard by which the game is ruled. To speed up the game beyond the capabilities and endurance of lads of 16 would be detrimental both to the game and the youth of the nation. I would encourage junior boys below public school age to engage in running, gymnastics, and Association football as their winter pastimes, while boxing and Rugby football can be developed later.

Sport certainly plays a big part in character building and in the development of the adolescent, but in certain quarters it is apt to bulk too largely in the curriculum. We must guard against making a fetish of games and neglecting other forms of recreation. Fatalities are few, and my limited experience coincides with that of Dr. Lempriere in bearing out the truth of Sir Clifford Allbutt's dictum. It is almost impossible for a healthy trained athlete to dilate his heart, and the young adolescent has a wide margin of elasticity. When trouble does occur it is usually the result of faulty training, or due to excessive exercise following some infectious disease, such as tonsillitis, influenza, subacute rheumatism, &c., the significance of which has not been recognised. Consequently, adequate supervision is essential. The fallacies do not seem to lie in the games themselves, but in the administration when it is carried out by enthusiastic but inexperienced prefects or young over-zealous housemasters, while the frequent fostering of the competitive spirit, and the glorification of the individual, are bound to have detrimental effects.

I am, Sir, yours faithfully,

R. COVE-SMITH.

Cambridge-terrace, Hyde Park, W., March 31st, 1930.

To the Editor of THE LANCET.

SIR,—Neither in the very interesting paper on Athletics in Schools, read by my friend Dr. Lempriere before the Hunterian Society, nor in the subsequent discussion, does there seem to have been any adequate consideration of diet in relation to athletic heart strain. Dr. Lempriere very properly emphasised the fact insisted upon by Bainbridge in his Physiology of Muscular Exercise, that "not only is the heart normally equal to the demands placed upon it, but in a perfectly healthy man even the most intense exertion of which he is capable has no harmful effect upon the heart."

Of the causes which render a heart unhealthy to the point where it strains on relatively slight exertion, Dr. Lempriere finds trifling attacks of influenza to be the most redoubtable, because they are liable to go unnoticed—a matter in which every one will agree. It is probable that the heart, like other organs, has its favourite poisons so to speak, and that among the more acute kind those of influenzal and kindred air-passage infections are the most frequent, except, of course, the truly rheumatic. But there are other toxins of a more chronic kind, which render the heart liable to strain under seemingly slight provocation, and they are the toxins which come from within. These are even more redoubtable than the toxins of the influenzal type, not only because no one seems to remember them, but because boys vary enormously in their susceptibility thereto. And these endogenous toxins can only come from faulty dietetics—a moment's consideration compels this conclusion.

I realise that in large communities it is very difficult indeed to cater for the physiological non-conformist, but I think that although recent advances in dietetics have vastly improved matters in most schools, there still remains room for much reasonable reform. Why, for instance, is a lusty lad—whose face is covered with acne, given large and repeated slabs of butcher's meat at school, when it has been proved that the absent slabs in the holidays means the disappearance of the acne? And if this can happen it is more than likely that poisons similarly generated can functionally tarnish the heart. I am personally persuaded that a good many albuminurics come into a closely neighbouring category.

I am, Sir, yours faithfully,

LEONARD WILLIAMS.

St. James's-place, S.W., March 28th, 1930.

DAWSON WILLIAMS MEMORIAL FUND.

To the Editor of THE LANCET.

SIR,—As honorary secretary of the Dawson Williams Memorial Fund Trustees, I beg to inform you that at a recent meeting of the Trustees it was resolved that the first award of the Memorial Prize be made to Dr. F. J. Poynton, senior physician to the Hospital for Sick Children, Great Ormond-street, for his work on behalf of rheumatic children, particularly with regard to the establishment of special "rheumatic centres."

Your readers may like to be reminded that the establishment of this prize was due to a desire to commemorate the work of the late Sir Dawson Williams, Editor of the *British Medical Journal*, and in view of his special interest in the question of pædiatrics it was resolved that the interest accruing from the funds collected should be devoted to a prize in connexion with that subject, to be awarded every two years, or at longer intervals, in the discretion of the Trustees, who are the Presidents for the time being of the Royal College of Physicians of London, the Royal College of Surgeons of England, the British Medical Association, the Royal Society of Medicine, the Section of Diseases of Children of the Royal Society of Medicine, and the Editor of the *British Medical Journal*. The prize is open to any registered medical practitioner in the British Empire, and takes the form of a cheque for 50 guineas.

It is hoped that the presentation of the prize may be made by the President of the British Medical Association at the annual meeting of that body at Winnipeg in August next.

I am, Sir, yours faithfully,

ALFRED COX,
Honorary Secretary of Fund.

British Medical Association House, Tavistock-square, London, W.C., March 29th, 1930.

ÆTIOLOGY OF ENCEPHALOMYELITIS FOLLOWING SMALL-POX.

To the Editor of THE LANCET.

SIR,—Prof. McIntosh has very clearly stated the alternative points of view as to the cause of encephalitis after vaccination or as a complication of small-pox—viz. (1) that the encephalitis is caused by the disease lowering the patient's resistance to another virus—e.g., that of encephalitis lethargica, or (2) that it is caused by the vaccinia or small-pox virus itself. He does not mention recent observations made in Holland, which appear to confirm the first view, the isolation from the throats of such cases of a small Gram-negative bacillus believed to be the cause of the encephalitis. It is suggested that this bacillus is the influenza bacillus. Prof. McIntosh's view I believe to be correct, the transmission of vaccinia by such brain material ought to leave the matter in no doubt.

The finding of the microbacillus is to me of peculiar significance, but the interpretation of its nature is, I believe, mistaken, for I have proved such a microbe to be the cause of fowl-pox by curing and preventing the disease with an antigen of it, and confirmed this proof of pathogenicity by transmitting the disease with a pure culture of it. If the proper cultural precautions are taken, such microbacilli can always be isolated from the throats of small-pox cases, and if the vaccine lymph or material from the poxes of small-pox is inoculated on the mucous membrane of a rabbit's nose the filter-passing virus form will develop into the microbacillus. I have been able to protect rabbits from vaccinia with a killed antigen of this microbe. It is significant to me that in the diseases in which the form of encephalitis appears, which is referred to by Prof. McIntosh, vaccinia, small-pox, measles, mumps, distemper, influenza, such minute bacilli, which furnish us with powerful therapeutic antigens, can be isolated if the proper cultural precautions are taken. My view is, therefore, that the virus is the filter-passing phase of a microbe which on mucous membranes is in the form of a bacillus.

This view that microbes can break up into or assume such minute forms in such environments as living tissues is so unpopular that it is not mentioned, and if a microbe visible by the ordinary microscope appears in filtered material it is at once rejected as a contamination. The matter is of great therapeutic importance, as a killed antigen of the filter-passing phase appears to be of poor antigenic quality, while a live virus which is a powerful antigen will produce disease in a percentage of those inoculated.

I am, Sir, yours faithfully,

Dublin, March 21st, 1930. W. M. CROFTON.

EXPENDITURE IN VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—One is constantly aware of the efforts being made by the voluntary hospitals to collect the funds which are necessary for the successful running of such admirable institutions. So much thought is given to the effort to increase income that the reduction of unnecessary expenditure does not seem to have had sufficient attention. May I be allowed to point out some directions in which I consider that unnecessary expenditure is being incurred by the voluntary hospitals, and suggest remedies for these.

(1) *Indiscriminate Admission of Patients to the Out-patient and Casualty Departments.*—I would suggest that, apart from emergencies, all patients at their first visit should pass through the almoner's department, and that only those who bring a letter from a doctor, or successfully prove that they are not insured under the National Health Insurance Act, or prove that they are too poor even to afford the most modest doctor's fee, be passed through. This, of course, would bar all persons entitled to medical benefit under the Act, and all those able to contribute to such a contributory scheme as has been running in London and many other parts of the country for several years. Such schemes, for the moderate sum of 3*d.* or 4*d.* per head per week, provide the patient with a family doctor who agrees to give him general practitioner treatment when necessary. This would lessen the crowding of out-patient departments, and also their expense, which must constitute a considerable part of the expense of running a voluntary hospital. I do not think that the consultants working in out-patient departments wish to treat minor ailments, and for teaching purposes these are of little value. So that this would also relieve the consultant of a mass of work which he does not want, and would allow him to resume his rôle of consultant. Also he would have less work to do in the out-patient department, and would have more time to teach on the cases that came up for an opinion.

(2) *Provision of Large Quantities of Medicines.*—I do not know what the drug bill of a large voluntary hospital amounts to during a year, but it must be very large, considering that nearly every patient leaves the casualty and out-patient departments with a large supply of medicines. One hears a great deal about the enormous quantity of drugs swallowed by the insured population. Is not this tendency perhaps a little stimulated by the treatment they receive when they go to hospital? I would suggest that a start be made by the voluntary hospitals in the education of the public against the medicine habit. This can be done much more easily in a hospital than in general practice. Again, when a patient is sent up by a doctor for an opinion or for some such treatment as is outside his scope—e.g., X ray and physiotherapy—and the patient is already receiving medicinal treatment from his general practitioner, is it necessary for the hospital to give him a further

supply of medicine? I would suggest that in such cases advice be given to the doctor, and only such treatment given to the patient as cannot be given by his private doctor.

(3) *Extended Use of Hospital Contributory Schemes.*—Large numbers of patients who contribute to such schemes as the Hospital Savings Association attend the voluntary hospitals for minor ailments, and receive medicinal treatment. No charge is made to these patients. I would suggest that under such schemes only such treatment should be given as cannot be given by a general practitioner, and that such contributions should be reserved for such things as, I believe, they were originally intended—e.g., in-patient treatment, operations, consultations, X ray, physiotherapy.—I am, Sir, yours faithfully,

Westbourne Park-road, March 29th, 1930. J. COHEN.

CLINICAL RESEARCH.

To the Editor of THE LANCET.

SIR,—It is always of interest to learn the views of others; and for this reason Dr. Frewen Moor's letter in your issue of March 29th (p. 724) is deserving of notice. It helps to explain many things. Let me give an instance. Some time ago I saw a case of typical sprue which had been under treatment over a continuous period at the hands of four medical men.

No. 1 diagnosed the case as dysentery, mainly, as far as can be ascertained, from the fact that the patient had lived in the tropics. There can be no doubt of the assiduity with which the treatment was carried out, for the patient had a course of emetine, followed by antidysenteric serum (presumably polyvalent), and finally a period of lavage of the colon. Eventually he recommended a "change of air" to the seaside, where the patient, much emaciated, came under the care of No. 2.

No. 2 made a very thorough examination of the patient as a result of which he stated that the patient was suffering from tuberculosis, and after several weeks of treatment, recommended him to go to the south of France, where he met No. 3.

No. 3 also carried out a routine examination, and at all events deserves credit for having recognised the "sore tongue," on the evidence of which, together with the patient's general condition, he diagnosed pernicious anæmia.

As Dr. Moor justly remarks, there are many methods of treating the same disease, but I cannot agree that all are equally effective; for No. 3 had all the patient's teeth extracted, although they do not seem to have been at all bad, and subjected him to a course of arsenic in increasing doses (this was in 1929). There was still no improvement, and the patient steadily deteriorating in health, decided to return to England, as he feared, to die. On his arrival he went to see No. 4, who during the war had had tropical experience and who had no hesitation in correctly diagnosing sprue. With appropriate treatment the improvement, in the patient's own words, was "a miracle."

It would appear to the ordinary individual that in such a case diagnosis comes first, not only in order of time, but also of importance. It is possible to recall many similar instances: subacute combined degeneration of the cord, with pernicious anæmia, diagnosed and treated as locomotor ataxy; early locomotor ataxy with lightning pains treated for two years as rheumatism; glycosuria due to a lowered renal threshold diagnosed and treated as diabetes mellitus, and so ad infinitum.

I am one of the old school, and believe that all treatment, to be successful, must be based upon an accurate diagnosis. Dr. Moor appears to agree with this in his concluding paragraph.

I am, Sir, yours faithfully,

March 28th, 1930. M.D., F.R.S. EDIN.

HENRY HILL HICKMAN MEMORIAL.

APPEAL CLOSED.—LORD DAWSON'S ADDRESS.

THE Committee report that the total sum received amounts to £256 10*s.* 6*d.*, and that the appeal is now closed. Hickman's family grave and tombstone have been restored and renewed and a tablet engraved by Mr. Eric Gill is to be unveiled in Bromfield Parish Church, Ludlow, by Sir StClair Thomson, late President of the Royal Society of Medicine, to-day (Saturday), April 5th, at 2.45 P.M. This will be followed by a dedication by the Rt. Rev. The Lord Bishop of Hereford. The balance of the fund will be devoted to establishing and endowing a medal for research and original work of merit in connexion with anæsthesia. Further particulars, including the names of the Trustees appointed, will be published later. The letter announcing the closing of the appeal, which is signed by Lord Dawson of Penn, Sir StClair Thomson, Mr. V. Warren Low, Hon. Treasurer, and Dr. Cecil Hughes, Hon. Secretary, expresses on behalf of the Committee cordial thanks to the numerous colleges, faculties, learned societies, and individuals who have so readily supported this appeal. The list of subscribers is as follows:—

Royal College of Physicians of London.
Royal College of Surgeons of England.
Royal College of Surgeons of Edinburgh.
Royal Society of Medicine.
Association of Surgeons of Great Britain.
British Medical Association.
Canadian Medical Association.
University of Birmingham: Faculty of Medicine and Dental Clinical Board.
University of Durham: Faculty of Medicine.
King's Coll. Hosp. Med. School.
St. Thomas's Hosp. Med. School.
Royal Dental Hospital: Medical Committee.
University of Oxford: Faculty of Medicine.
Bath and Bristol Surgical Club.
Hunterian Society.
Royal Society of Medicine: Odontological Section and Section of Anæsthetics.
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Mr. A. W. Adams, F.R.C.S.
Dr. R. E. Apperly.
Lady Berry, M.D.
Dr. W. R. Bett.
Mrs. Bettridge and descendants of Hickman's daughter, Hannah.
Dr. A. D. Blackadder.
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Rev. H. Summerhayes.
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Mr. C. A. Thompson.
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Dr. E. W. Ainley Walker.
Dr. Henry S. Wellcome.
Sir William Wheeler, F.R.C.S.
Mr. A. J. Wright, F.R.C.S.

LORD DAWSON'S ADDRESS.

In his address to the Section of Anæsthetics of the Royal Society of Medicine, delivered on April 2nd during a reception at the Wellcome Historical Medical Museum, Lord Dawson having estimated the work of Hickman by picturing briefly the state of knowledge and thought belonging to the day continued: To Hickman is the credit of appreciating the sufferings inflicted by surgical operations and the conception of means to alleviate them by the production of insensibility. In a letter dated Feb. 21st, 1824, Hickman wrote: "I have frequently lamented, when performing my own duties as a surgeon, that something has not been thought of whereby the fears may be tranquilised and suffering relieved." Further, he was the first to put his ideas to the test of experiment. Hickman rendered animals unconscious first through partial asphyxiation by the exclusion of air, then by inhalation of carbonic acid, and later of nitrous oxide. During anæsthesia he made incisions, applied ligatures, amputated ears and limbs, without pain and with good surgical results. His earnest purpose was to extend the benefit of his findings to man. To this end he published (August, 1824) his famous pamphlet, "A Letter on Suspended Animation, containing experiments showing that it may be safely employed during operations on animals, with the view of ascertaining its probable utility in surgical operations on the human subject, addressed to T. A. Knight, Esqr., of Downton Castle, Herefordshire, one of the Presidents of the Royal Society." This pamphlet, a witness of the scientific spirit and method, is published in full in the Hickman Centenary Book, for the issue of which a debt of gratitude is due, not only to the author, but to the Wellcome Museum.

Hickman's researches, said Lord Dawson, were ignored by the medical profession in his own country, in spite of the friendship of Knight for Davy, the then President of the Royal Society, so in April, 1828, he went to Paris and presented to King Charles X. a memorial praying that his work might be presented to the French Academy of Medicine. This was done and a Commission was appointed. But no investigation followed. The work to which he had sacrificed his career failed of recognition alike in France and England. Hickman returned home and died shortly afterwards at the age of 29. How strange is the continued apathy thus disclosed, and yet it continued for a further 13 years. From 1831 onwards a fashion arose of inhaling ether and to a less extent nitrous oxide to the point of excitement and even intoxication for motives of curiosity or fun. For students and other youths such inhalations became a pastime—they were the cocktail parties of the early nineteenth century. Still the scales did not fall from the eyes of the surgeons. During one of such frolics a negro boy was dragged in, ether administered, with the result that insensibility followed, and despite the (to us) obvious application it was not till 1842 that a young dentist, Crawford Long, used ether for a definite surgical purpose.

Then events followed more quickly. Wells, in 1844, employed nitrous oxide for anæsthesia. Morton, unaware of Long's work, administered ether in Massachusetts General Hospital in 1846—the first public use of anæsthesia. Then a year later, Flourens, the distinguished physiologist, described the effects of chloroform on the lower animals, and following this chloroform was employed at St. Bartholomew's Hospital by Sir William Lawrence, and in Edinburgh by Sir James Simpson, who published the details of 50 cases in which he had administered chloroform with success.

THE Ludwig Darmstaedter prize with the Paul Ehrlich medal for outstanding scientific work in chemotherapeutics and biology has been awarded by the Council of the Georg-Speyer-Haus Foundation jointly to Dr. Ernst Meinicke, director of the serological institute and sanatorium at Ambrock, and to Prof. Hans Sachs, director of the institute for experimental cancer research at Heidelberg, for their serological investigations, more particularly in the diagnosis of syphilis.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

MENTAL TREATMENT BILL.

THE Mental Treatment Bill was further considered by Standing Committee A of the House of Commons on Thursday, March 27th. Mr. CECIL WILSON was in the chair.

Power to Make Rules.

On Clause 15 Mr. WOMERSLEY moved to add at the end of the clause the following words:—

"The Board of Control shall, before making any rules under this Act or the principal Act, consult the associations representing the county and county borough councils and the visiting committees."

He said that he moved the amendment on behalf of the associations representing the county councils and county boroughs, who felt that they ought to be consulted before these rules and regulations were framed by the Board of Control. The feeling of the authorities was all the stronger in view of the fact that the Minister of Health was not able to accept the amendment moved to Clause 14 at the previous meeting of the Committee, which would have given a right of appeal to the Minister of Health on any question of dispute between the local authorities and the Board of Control.

Mr. GREENWOOD (Minister of Health) said that even if this amendment were desirable, it went much further than anything the local authorities had ever asked for. It would compel the Board of Control to consult these associations on matters with which they were not directly concerned, or regulations affecting registered hospitals, and licensed houses which were not part of the direct business of the local authorities. There had grown up, as everyone was aware, in the Ministry of Health a method of very full consultation with local authorities on all matters even indirectly affecting them. That was done without any legal compulsion of any kind. There need be no fear on the part of the local authorities that they would not be fully consulted. He objected to this principle of compulsion. Very often the medical profession had urged upon Ministers of Health that local authorities should be required to consult the representatives of the profession on all kinds of questions affecting the public health. That claim had always been resisted on two grounds. In the first place if negotiations did not go very well, there might arise on the part of the local authorities a policy of only carrying out the minimum consultation required by the law and no more. In the second place it had been urged that the local authorities were responsible to the rate-payers and were entitled to carry on their work in their own way. That was not to say, however, that very close coöperation and consultation between the medical profession and the local authorities was not desirable and very useful, but the case was that to exercise compulsion did not achieve the best results. There was an exact parallel in the case of the amendment moved by Mr. Womersley, and he hoped that he would not press his point.

Dr. VERNON DAVIES asked if it would be possible for the Minister to issue to the associations of municipal corporations and county councils any rules which it was proposed to issue with a view to getting their opinion upon them?

Mr. GREENWOOD said it was the custom to circulate draft Rules beforehand. He was prepared to give a specific pledge that from now onwards there would be the closest coöperation in the formation of these rules, and that they would be placed in the hands of local authorities before they were put into operation.

Mr. WOMERSLEY said in view of the definite pledge of the Minister he would withdraw his amendment.

The amendment was withdrawn. Clause 15 was added to the Bill.

Medical Protection.

On Clause 16 (Amendment of Section 330 of the principal Act)

Mr. GREENWOOD moved in Subsection (1) (i) after the word "report" to insert the words "application, recommendation." He said it would be seen that the clause as drafted reproduced the reference in Section 330 of the principal Act with regard to petition, reception order, report, certificate, and so on. They had introduced two new terms into the procedure under the early clauses of this Bill. In Clause 1 (1) there was the application in the case of a voluntary patient, and in Clause 1 (2) a medical recommendation in the case of a minor. These terms were also used with regard to temporary patients in Clause 5. As it was essential to give the protection afforded by

Section 330 of the principal Act to persons coming within this Bill, it was intended to add these words.

Lieut.-Colonel FREMANTLE said he had put down a similar amendment, and the medical members were grateful to the Minister for accepting the principle and enlarging it.

The amendment was agreed to.

Mr. GREENWOOD moved an amendment to Subsection 1 (i) to insert after the word "Act" the words "or any Act amending this Act." He said the words "this Act" meant the Act of 1890. In order that the words might cover the present Bill this amendment was necessary.

Dr. DAVIES: Will this also apply to prospective legislation?

Mr. GREENWOOD: Yes, in so far as it applies.

The amendment was agreed to.

Dr. MORRIS-JONES moved an amendment to Subsection (1, 1), to leave out the words "without reasonable care," and to insert instead the following "negligently and without reasonable and probable cause. Provided that in the case of a trial with a jury the question of reasonable or probable cause shall be determined by the Judge."

Mr. GREENWOOD said there were three amendments on the paper which attempted to deal with the same point—namely, the desire to give fair protection to the medical profession against unfair and vexatious actions. It was important that that should be done. The matter was considered at great length by the Royal Commission, and two distinguished lawyers on the Commission. Mr. (now Lord) Macmillan and Mr. (now Sir William) Jowitt, the Attorney-General, drafted very carefully the wording which had been incorporated in the Bill. Subsequently he (Mr. Greenwood) met representatives of the British Medical Association. While he could not agree with their claim for absolute privilege, as he felt there must rest on the medical man a certain responsibility, he stated that he was prepared to consider whether he could go a little further if it could be done properly. Dr. Morris-Jones's amendment was open to a number of objections. If the Committee felt that Parliament ought to go a little further, he (Mr. Greenwood) had prepared a new form of words, which he would be glad to move later as an alternative.

Dr. MORRIS-JONES said in view of the Minister's explanation he would withdraw his amendment.

The amendment was withdrawn.

Lieut.-Colonel FREMANTLE moved in Subsection (1, 2) to leave out the words:

"such proceedings shall, on application to the High Court, be stayed on such terms as to costs and otherwise as the Court may think fit, unless the Court is satisfied that there is substantial ground for alleging that such act was done in bad faith or without reasonable care."

and to insert instead the following:—

"(*a*) The person taking such proceedings shall apply to the High Court for leave to proceed therein after service of the writ and before taking any further step in the said proceedings. Fourteen days' notice of such application shall be given to every other party to the said proceedings. Upon hearing such application the Court shall refuse leave to proceed and shall stay the said proceedings on such terms as to costs and otherwise as the Court thinks fit, unless the Court is satisfied that there is substantial ground for alleging that such act was done in bad faith or without reasonable care. (*b*) Where the person taking such proceedings shall have taken any further step therein after service of the writ and without having obtained leave to appeal upon an application for leave to proceed as required by sub-paragraph (*a*) of this Subsection or where the said person has taken no further step therein after service of the writ, and failed to make such application for leave to proceed within a reasonable time from the date of service of the writ, the High Court shall, on the application of any other party to the said proceedings, stay the said proceedings on such terms as to costs and otherwise as the Court thinks fit."

He said that under the principal Act, Section 330, a medical man who signed a certificate might be challenged by a patient, or a relative of a patient, or other interested person, and might be sued, but it was provided that "he shall not be liable to any civil or any criminal proceedings if he has acted in good faith, and with reasonable care." The difficulty, however, had been the interpretation of the law. In the Hume-Spry case, Lord Justice Banks held as a result of reading the Section that "if there was any scintilla of evidence to go before the jury in respect of the claim then the claim could not be withheld from the jury." That meant that the safeguard in the Section was no safeguard. Many cases had come before the courts, although eventually they had been shown to be frivolous and unnecessary. On the other hand, they had a case in December of last year, Easton *v.* Potts and Johnson, which was decided against the doctors by the Master in Chambers, not on the ground that he was not satisfied of their good faith, but that he was not satisfied that they had shown evidence of reasonable care. The judgment was reversed on appeal, and the remarks of Lord Justice Scrutton were very much to the point:

"He emphasised the importance of protecting those who, at the invitation of Parliament, fulfil a duty in the interests of the community as well as of the patient. If any doctor certifying is to be exposed to the cost and danger arising after the event of judgment—by people who did not see the patient at the time—that the patient at that time was not of unsound mind, the only effect and the natural effect would be that no doctor would certify, and that the community, which is to be protected as well as the individual, would be exposed to the risk of having persons of unsound mind wandering about without adequate control, to the danger of themselves and possibly to the danger of the community. We have had a series of cases in recent years showing the risks to which doctors are exposed by actions alleging that they have certified improperly either dishonestly or without due care. It is common knowledge that the result of these cases has been that many doctors will not certify at all. They will not run the risk of undertaking the duty Parliament seeks to put upon them."

That was the position which was dealt with by the Royal Commission, who were very emphatic on the subject. They said that the medical man was not compelled to certify, that he was doing it as a public service, and that if he was going to run the risk of being mulcted in damages, even up to £30,000, although such judgment might be reversed on appeal, still he had all the anxiety and worry, and it was not worth while for the sake of a few guineas or a few shillings to run the risk. After going through their recommendations the Royal Commission said:

"The complete co-operation of the medical profession is vital to the proper administration of the Lunacy Code. But they are at present performing these duties with increasing hesitation and reluctance; and the position revealed by the evidence leaves little room for doubt that unless some relief is found for the situation without delay a breakdown in the system is inevitable."

That was the position which the Committee were faced with. It was not merely a question of ordinary professional justice. The point was how they could prevent a breakdown of the system and get medical men, who were the only persons who could supply this service to the community, to undertake the work in the interests of the public. It was natural that evidence was taken from the British Medical Association, which represented something like two-thirds or three-quarters of the profession. The Minister of Health had said he could not go as far as the original proposal of the British Medical Association, and grant complete privilege. He (Colonel Fremantle) had reason to believe that the British Medical Association recognised that it would be difficult for Parliament to grant complete privilege. That being the case they consulted a distinguished lawyer and King's Counsel, who was also the member for Holborn (Mr. S. Bevan), under whose direction the amendment which he (Colonel Fremantle) had moved, was drafted. If the Committee agreed to this amendment, a further amendment was suggested to enable the Court at their discretion to sit with an assessor, either a medical man or a lawyer, who would be nominated by the Lord Chancellor from a panel recommended by the President of the British Medical Association. That would give greater confidence to the medical profession. There was nothing mandatory about the amendment.

A Possible Alternative.

Mr. GREENWOOD said it would not be fair to expect the Committee to adopt the amendment that morning, because it really was one for the Report stage. He would like, however, members of the Committee to have before them the possible alternative. The point at issue in cases of this kind was whether a doctor had acted in good faith and with reasonable care, and that was a question that a judge was competent to settle. He had consulted the Lord Chancellor as head of the judiciary, and his view coincided with his own—namely, that the procedure of a medical assessor ought not to be adopted. The amendment which he (Mr. Greenwood) had already indicated he would be prepared to move on the Report stage, would give substantial and adequate protection to the medical profession. Therefore if the two amendments referred to in Colonel Fremantle's speech were pressed, he must ask the Committee to reject them.

Dr. VERNON DAVIES said that some of these mental cases were extremely difficult, and means should be found to protect the doctor, not against the consequences of bad faith or carelessness, but against merely vexatious actions. The amendment which Mr. Greenwood had just handed round the Committee made the Bill a little better, but it did not go nearly so far as the amendment under discussion. The amendment of the Minister would have to be considered very carefully by legal opinion to see how far it carried out what the doctors wanted.

Dr. HASTINGS said he hoped the Minister would see his way to accept the spirit of the amendment, providing that the Court might, at its discretion, sit with one or more medical assessors. He (Dr. Hastings) had repeatedly given evidence in medico-legal cases when he had been quite certain that the judge had not appreciated at all the points which he had been trying to make. He was convinced that there was very great value in having a medical assessor sitting with the judge in difficult medico-legal cases. He

thought, however, it would be a great mistake to limit the assessors to a panel of names recommended by the President of the British Medical Association. He thought it would be a great mistake to bring that Association into the matter at all. A large number of medical men were members of the Association; on the other hand, they knew that it represented the most reactionary and commercial section of the profession. He felt very strongly that discretion should either be left to the Lord Chancellor, or if they wanted to bring in a medical body, they should bring in the scientific and not the commercial section, for instance, the President of the Royal College of Physicians.

Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) said it was impossible to accept the proposal for the nomination of a medical assessor. The whole spirit of the High Court was contrary to the idea of introducing expert assessors into the question whether a person had acted with reasonable care and good faith. She wanted to say to those who thought that they were giving too much protection to doctors in this matter that there was a real danger of frivolous and even insane complaints. Before the machinery of prosecution was set in motion there ought to be some responsible person to see if there was anything in the complaint worth sending to a jury. The Government were accepting in substance the first amendment in the name of Colonel Fremantle. They could not accept his words for a good many reasons. She suggested that Colonel Fremantle, having seen the Government amendment, which would come up on the Report stage, should now withdraw his own amendment.

Lieut.-Colonel Fremantle said he would withdraw his amendment on the understanding that it should be put on the paper for the report stage alongside the amendment of the Minister for the purposes of comparison.

The amendment was withdrawn.

Lieut.-Colonel FREMANTLE moved at the end of Subsection (1) to insert the words:—

"For the purpose of determining any question under the preceding Subsection the Court may, at its discretion, sit with one or more assessors nominated by the Lord Chancellor from a panel of names recommended by the President of the British Medical Association."

Dr. VERNON DAVIES moved as an amendment to the proposed amendment to leave out the words "from a panel of names recommended by the President of the British Medical Association."

Mr. GREENWOOD said if he were forced to accept an amendment on these lines, he would favour the amendment to the amendment, but that did not in his view destroy the case against the amendment.

The amendment to the amendment was agreed to.

The motion that "the proposed words as amended be there inserted" was negatived by 18 votes to 9.

Clause 16 as amended was added to the Bill. Clause 17 (Amendment of Section 11 of the principal Act) was also added to the Bill.

The Committee adjourned.

The Mental Treatment Bill was further considered by Standing Committee A of the House of Commons on Tuesday, April 1st. Mr. CECIL WILSON was in the chair.

Various Amendments.

On Clause 18 (Provision as to rate-aided patients) and Clause 19 (Amendment as to persons of unsound mind liable to be removed to workhouses),

Mr. GREENWOOD, Minister of Health, moved amendments providing that both clauses should come into operation immediately on the passing of the Act. He said that this was necessary for the purpose of synchronizing the operation of these clauses as far as possible with the Local Government Act which came into operation that day.

The amendments were agreed to.

On Clause 20 (Substitution of name "mental hospital" for the name "asylum," and expression "rate-aided" for expression "pauper,"

Mr. GREENWOOD moved the following amendment:—

Any provision in any local Act for the reception of voluntary boarders into any institution shall have effect as if for references therein to "voluntary boarders," there were substituted references to "voluntary patients," and any reference in this Act to persons received as voluntary patients, or as patients, under any local Act shall be construed as including a reference to persons received before the commencement of this Act as voluntary boarders under any such Act.

The amendment was agreed to.

Dr. MORRIS-JONES moved amendments to provide that after the passing of the Act the word "lunatic" as well as "pauper" should cease to be used and that the phrases "mental patient" or "person of unsound mind" should be substituted.

Mr. GREENWOOD said that there were certain administrative difficulties in the way of entirely getting rid of the term "lunatic" in an Act of Parliament, but if the Committee felt strongly on the matter he was willing to move an alternative amendment providing that the word "lunatic" should no longer be used in any Act or Order except in relation to criminal lunatics or persons detained as lunatics outside England.

Dr. MORRIS-JONES said that if the Minister assured the Committee that the term "lunatic" would only be used when it was absolutely necessary for administrative reasons he would withdraw his amendment.

Mr. GREENWOOD explained that the phrase "outside England" meant Scotland and Northern Ireland.

Dr. MORRIS-JONES's amendment was withdrawn. Mr. Greenwood then moved his alternative amendment, and this was agreed to.

Clause 20 was added to the Bill.

On Clause 21 (interpretation and adoption),

Mr. GREENWOOD moved an amendment providing a revised definition of the phrase "person in charge." This was declared to mean

"in relation to a person received or about to be received under this or any local Act as a voluntary or temporary patient (not being a person received, or about to be received, as a single patient) the medical superintendent or other person in charge of the institution, hospital, home, or place into which he was, or was about to be, so received, and in relation to a person so received, or about to be so received, as a single patient, the phrase meant the person into whose charge he was, or was about to be, so received."

The amendment was agreed to.

Mr. GREENWOOD moved an amendment deleting the sub-section extending "local authority" to include the Lancashire Mental Hospitals Board, the West Riding Mental Hospitals Board, and the Staffordshire Mental Hospitals Board. He gave an undertaking that before any rules affecting these bodies were made by the Board of Control he would take into consultation not only the hospitals boards, but the county boroughs concerned.

The amendment was agreed to and Clause 21 was added to the Bill.

Clause 22 (short title, &c.) provides that the Act shall not apply to Scotland or Northern Ireland.

Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) said that it was necessary to exclude these countries, which had different legislation.

The clause was added to the Bill.

Financial Obligations.

Some discussion took place on the financial obligations which were likely to be thrown upon local authorities as a result of this Bill, and Mr. Greenwood was pressed to give assurances that the Exchequer would give assistance to local authorities to meet those new obligations.

Mr. GREENWOOD said that the local authorities would not be precluded from coming at the end of the first block-grant period for a revision of their grant in respect of any additional expenditure thrown upon them.

Lieut.-Colonel FREMANTLE moved a new clase providing for the auditing of the accounts of licensed houses.

Mr. GREENWOOD, while accepting the principle of the new clause, said that he would prefer different wording. He suggested that the following new clause ought to meet the hon. Member's purpose:—

1. The licensee of every licesed house shall cause such accounts to be kept as the Board of Control may prescribe. Those accounts shall be audited once a year in such manner and by such person as the Board directs.

2. A copy of the accounts and of the report of the auditor thereon shall be sent by the licensee to the Board of Control who, if they think fit, may publish them in whole or in part.

3. The licensee shall pay to the auditor such fee in respect of the audit as the Board of Control shall direct.

He said that it was intended to use the services of the official auditors for this purpose.

Lieut.-Col. FREMANTLE accepted the wording of the Minister's clause in substitution for his own and Mr. Greenwood's clause was then agreed to.

An amendment was agreed to in the First Schedule providing that a medical practitioner in filling up forms of recommendation for temporary treatment should distinguish between facts relating to the patient based on his own observation and facts communicated to him by others.

The Committee adjourned.

CARDIFF CORPORATION BILL.

On March 25th the Local Legislation Committee (Section B) of the House of Commons considered the Cardiff Corporation Bill. Mr. CAPE was in the chair.

Medical Secrecy and Cases of Cancer.

One of the Clauses of the Bill proposed to give the Corporation power to pay any medical practitioner a fee of 2*s.* 6*d.* for the notification of a case of cancer in his private practice, or 1*s.* for a case met with in public practice.

Dr. PICKEN, medical officer of health for the city of Cardiff, giving evidence in support of the clause, said that there had been in operation for some time in Cardiff a system to enable the authorities to ascertain the housing conditions and mode of life of persons suffering from cancer. That system was inaugurated on the assumption that it was authorised by an Act of 1925. It was now desired to put the matter beyond doubt as to legal authority.

In reply to Captain R. R. HENDERSON (a member of the Committee), Dr. PICKEN said the main object was to get in touch with cancer patients. One advantage would be that it would help in getting such patients into hospital in cases where early treatment was essential.

Captain HENDERSON: Will not this proposal involve a breach of confidence between a patient and his medical adviser? It seems to be a fee or bribe to a medical man to divulge the illness from which a patient is suffering.

Mr. J. H. PALIN (another member of the Committee): Surely not for half-a-crown.

Dr. PICKIN said that the clause laid no duty on a medical practitioner.

Captain HENDERSON: Have you submitted the clause to the medical authorities?

Dr. PICKIN said that the clause was the outcome of discussion by a committee consisting of experts and medical practitioners who approved the proposal.

After further discussion the Committee decided that the clause must be struck out of the Bill.

SLUM CLEARANCE BILL.

On Thursday, March 27th, Mr. GREENWOOD introduced the Housing (No. 2) Bill, a measure to make further and better provision with respect to the clearance or improvement of unhealthy areas, the repair or demolition of insanitary houses and the housing of persons of the working classes; to amend the Housing Act, 1925, the Housing, &c., Act, 1923, the Housing (Financial Provisions) Act, 1924, and the other enactments relating to housing subsidies; and for purposes connected with the matters aforesaid.

The Bill was read a first time.

PHARMACISTS IN POOR-LAW HOSPITALS.

On Monday, March 31st, on the motion for the adjournment,

Captain GUNSTON raised the question of the position of pharmacists in poor-law hospitals, as it was affected by the Draft Poor Law Order which had been published by the Ministry of Health called the Public Assistance Order, 1930. He said that the pharmacists were very much concerned about this Order, because they felt that the status of the members of their profession employed in poor-law hospitals would be very seriously jeopardised. In the voluntary hospitals pharmacists were independent officers in charge of their own department. In the Navy pharmacists were of equal rank with schoolmasters and medical officers. He urged that if this was the position in these two cases, the status ought to be given by local authorities. It was not claimed that the Minister should compel the authorities to give the same status to pharmacists, but only that authorities should be allowed to decide whether they would do so or not. They did not ask for more control, but simply that these matters should be left in the hands of the local authorities.

Miss LAWRENCE said that if that were all that was asked, she could answer in one word, Yes. This was not a new Order. It was an old Order, reissued and reprinted, and nothing more. There was no modification of substance. The only modification was the verbal one necessitated in the change in the names of the new authorities. If local authorities desired that a pharmacist should be a chief officer, they could recommend the matter to the Ministry, and discuss it with him, and even appoint him as chief officer before the Minister examined the question. The assurance was given to the local authorities by the previous Government that any amendment or modification with regard to superior officers should not be made until after consultation with the authorities. If any amendment was desired it could be made subject to consultation with the local authorities. The Ministry had changed nothing. They had not made it impossible for these people to be appointed. In these matters, as in every other, they had left the position as it was, for consultation with the new authorities.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 26TH.

Medical Education for the Navy.

In reply to Dr. VERNON DAVIES,

Mr. ALEXANDER, First Lord of the Admiralty, stated that professional courses were held at the Royal Naval Medical School. The amounts included in the estimates for naval courses at Greenwich, exclusive of the Staff and War Colleges and the Medical School, for 1928, 1929 and 1930, were £78,500; £78,130; and £77,900 respectively. Vaccines used in the Navy were produced at the Medical School, Greenwich, except the anti-small-pox lymph.

Medical Officers in the Army.

Dr. VERNON DAVIES asked the Secretary of State for War if he would give for each of the last ten years for which statistics were available the total number of medical officers in the Army, the number who joined, and the number who left the service in each year.—Mr. T. SHAW gave the following table showing the total number of Regular Officers, Royal Army Medical Corps, serving in the Army by years from 1923 inclusive, together with the number who joined and the number who left the service each year.

Year.	Strength on Jan. 1st.	Joined.	Retired, resigned or died.
1923	989	11	89
1924	911	12	53
1925	870	9	47
1926	832	13	52
1927	793	25	38
1928	780	28	54
1929	754	28	32

THURSDAY, MARCH 27TH.

Report on Poisons and Pharmacy Acts.

Sir KINGSLEY WOOD asked the Home Secretary whether he could make a statement as to the Government's intentions concerning the Report of the departmental committee on the Poisons and Pharmacy Acts.—Mr. CLYNES replied: The Government recognise the importance of this report and will take it into consideration as soon as possible, but there is no prospect of their introducing the comprehensive legislation which would be required to give effect to the committee's recommendations this session.

Criminal Offences against Children.

Captain PETER MACDONALD asked the Home Secretary whether it was his intention to introduce a measure amending the Criminal Law in relation to children and young persons; and, if so, whether the Bill would be brought in during the present session of Parliament.—Mr. CLYNES replied: It is the intention of the Government, as I have stated in reply to previous questions, to introduce a Bill to amend the Children Act, 1908; but I regret that it is impossible in view of the pressure of Parliamentary business to take the Bill this session.

Street Offences.

Mr. GRAHAM WHITE asked the Home Secretary if it was the present intention of the Government to introduce legislation to give effect to the recommendations of the Street Offences Committee.—Mr. CLYNES replied: I regret I do not see my way at present to introduce legislation upon this subject.

Quality of Margarine Materials.

Mr. CHARLES WILLIAMS asked the Minister of Health if imports of oleo oil and oleo stearine used in margarine must be accompanied by a certificate that the fat was derived from animals free from disease.—Mr. GREENWOOD replied: It is not the practice at English ports to require such a certificate.

Tuberculin-tested Animals and Exhibition Order.

Mr. RAMSBOTHAM asked the Minister of Health whether he had received any protests from agricultural societies regarding the order he recently issued, prohibiting the exhibition at agricultural shows of animals from tuberculin-tested herds; and, if so, whether, in view of the hardship caused by the imposition of this order, he would reconsider the advisability of introducing it.—Mr. GREENWOOD replied: Yes, Sir. I have been informed that some of the bodies responsible for the organisation of agricultural shows are now prepared to arrange for the segregation of animals belonging to licensed tuberculin-tested herds, and I have promised to see their representatives with a view to considering the withdrawal of the prohibition in the case of shows where effective provision is made for this purpose.

Deposit Contributors and National Insurance.

Mr. THOMAS LEWIS asked the Minister of Health if he would state, for the year ending December, 1929, the number of applications received for admission to the insurance section of the deposit contributors' fund in accordance with Section 11 of the National Health Insurance Act, 1928, and the number of such applications which had been accepted and rejected, respectively, with details of the causes

of such rejection.—Mr. GREENWOOD replied: During 1929 the number of applications received for admission to the insurance section of the Deposit Contributors Fund, in England and Wales, was 12,607, of which 6176 were accepted and 6521 rejected. Figures are not available as to the number of rejections in each of the various categories, and considerable labour would be involved in extracting such information. Examination of a sample of the rejected cases shows, however, that about 90 per cent. of the applicants furnished no evidence that the state of their health was such that they were unable to obtain admission to an approved society, while the remaining 10 per cent. were found to be ineligible for admission by reason of not satisfying the qualifying conditions.

Medical Officers of Health and Vaccination.

Mr. GROVES asked the Minister of Health whether he was aware that in many parts of London pressure had been exercised by employers of labour to get their employees vaccinated and that in several instances this action had been taken at the request of the local medical officer of health; and whether, in view of the fact that the cases of smallpox notified this year were for the most part so mild that in other countries they would not be diagnosed as smallpox at all, he would issue an order requesting medical officers of health not to press vaccination as they had been doing hitherto.—Mr. GREENWOOD replied: I have no information as to the first part of the question, but I am aware that it is the practice of medical officers of health to advise the vaccination or re-vaccination of persons who have been in contact with smallpox, and it is probable that they have given this advice to employers of labour. As regards the second part of the question, I do not think that I should be justified in taking any action to interfere with the discretion of medical officers of health in this matter.

Mr. FREEMAN asked the Minister of Health whether his attention had been drawn to a circular letter sent by the medical officer of health for Bethnal Green to medical practitioners in Bethnal Green, dated March 17th, asking them when notifying cases of chicken-pox to indicate whether the patient has been vaccinated or not; whether his department has suggested the sending of such a circular; whether a similar circular had been issued by any other medical officer of health; whether he was aware that vaccinated cases of chicken-pox were automatically diagnosed as chicken-pox while unvaccinated cases of chicken-pox might be rediagnosed as small-pox; and whether he would see that cases of small-pox were diagnosed entirely on the symptoms and not on the presence or absence of vaccination marks.—Mr. GREENWOOD replied: I have seen the circular letter in question and understand that it was issued by the medical officer of health in order to facilitate his inquiries into the prevalence of small-pox in the borough. My department have not suggested the issue of such a circular, and I have no information of the extent to which other medical officers have taken the same course. The answer to the fourth part of the question is in the negative. As regards the last part, the diagnosis of small-pox, as of other diseases, is a matter for the medical practitioner in attendance and I have no authority to give any directions on the subject.

Deaths Due to Vaccination.

Mr. GROVES asked the Minister of Health how many death certificates were received during the year 1929 on which were the words vaccinations, vaccinia, or post-vaccinal encephalitis; what were the ages of those cases; and in how many other cases was vaccination associated with the cause of death without that fact being mentioned on the death certificate.—Mr. GREENWOOD replied: During the year 1929, 23 deaths were registered in England and Wales in which the words "vaccination," "vaccinia," or "post-vaccinal encephalitis" appeared in the medical or coroner's certificate. In one of these cases, however, the reference on the certificate to these conditions takes the form of a statement that they were not responsible for the death. The ages of the deceased were respectively 4 weeks, 2 months, 4 months, 5 months (4 cases), 6 months (2 cases), 7 months, 2 years, 5 years, 8 years, 9 years, 10 years, 12 years, 14 years (2 cases), 16 years, 17 years, 26 years, 31 years and 46 years. Fourteen other cases were brought to the notice of my department in which death occurred within 4 weeks of vaccination. In at least 9 of these there is no reason to think that vaccination contributed in any way to the fatal issue.

Government and Mental Deficiency.

Miss LEE asked the President of the Board of Education what action the Government proposed to take regarding the findings of the report of the Mental Deficiency Committee issued in 1929.—Sir CHARLES TREVELYAN replied: The recommendations of the report of the Mental Deficiency Committee involve important legislative changes, which will need careful consideration and affect other Government departments as well as the Board of Education. I am not yet in a position to indicate the attitude of the Government towards the report.

Children and Attendance at Cinemas.

Mr. HARRIS asked the President of the Board of Education whether he had had any reports made by the medical officer of the Board as to the effect on the child mind of constant attendance at cinemas; and, if not, whether he would cause an inquiry to be held and consult local education authorities thereon.—Sir CHARLES TREVELYAN replied: No report has been made by the Board's medical officers as to the effect on the child mind of constant attendance at cinemas. I am afraid that I cannot undertake to initiate an inquiry of this kind at the present time; but I understand that some investigations are to be made by the London local education authority, and I shall await the results with great interest.

Supply of Milk to School-children.

Dr. PHILLIPS asked the President of the Board of Education whether he was aware that recent investigations in England and Scotland had proved the great value of milk in the diet of children; and whether he could say to what extent comprehensive schemes for the supply of milk to school children were in operation in England and Wales.—Sir CHARLES TREVELYAN replied: The answer to the first part of the question is in the affirmative. With regard to the second part, I am glad to be able to say that an increasing number of children receive milk at school, either under schemes organised by the teachers through the National Milk Publicity Council, or under arrangements made by the local education authority. In Birmingham, for instance, over three and a quarter million bottles of milk were supplied to school children in 1928, representing a daily average of over 15,000 children. In Leeds more than half the school children receive milk under the exceptionally extensive arrangements made by the local education authority. I am having more detailed inquiries made.

MONDAY, MARCH 31ST.

Sickness Certificates and National Insurance.

Sir KINGSLEY WOOD asked the Minister of Health whether there had been any evidence lately brought to his notice of the laxity of certain doctors in issuing sickness certificates under the National Health Insurance Act; and whether it was proposed to issue any new regulation in connexion therewith.—Miss S. LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: This subject has been under discussion with representatives of those concerned for a considerable time, and the draft of a new regulation with respect to the issue of medical certificates for National Health Insurance purposes will be published at a very early date.

British Officers in Indian Medical Service.

Dr. VERNON DAVIES asked the Secretary of State for India the total number of British officers in the Indian Medical Service, the number who joined, and the number who left the Service in each year from 1921 to date.—Mr. WEDGWOOD BENN replied: So far as the figures can be ascertained, the following table gives (1) the total number of British Officers in the Indian Medical Service in January in each of the years stated; (2) the number who joined; and (3) the number who left the Service in each year.

Year.	1	2	3	Year.	1	2	3
1921	629	15	54	1926	506	12	29
1922	590	7	46	1926	489	15	35
1923	551	28	37	1928	469	24	35
1924	542	9	27	1929	458	25	33
1925	524	11	29	1930	450	8*	—

* To date.

Physical Defects and Rejection of Army Recruits.

Dr. HASTINGS asked the Secretary of State for War the physical and mental conditions which determined the rejection of 61 per cent. of the recruits presenting themselves for enlistment in the Army in 1929.—Mr. T. SHAW replied: The main physical defects which caused the rejection of recruits by the examining medical officers were as follows: Diseases of the middle ear, loss or decay of many teeth, defects of lower extremities, defective vision, diseases of the heart, insufficient weight, flat feet, under chest measurement. I regret that information is not available to show the physical defects for which recruits were rejected by recruiting authorities other than medical officers.

TUESDAY, APRIL 1ST.

Health of the Mercantile Marine.

Mr. THOMAS LEWIS asked the President of the Board of Trade what progress had been made by the committee set up to consider and advise on any questions affecting the health of the mercantile marine; whether he could give the statistics relating to the mortality of seamen, and the hygiene of crew spaces on board ship into which the committee had been conducting an investigation since last July; and when the committee would be able to make a report.—Mr. GRAHAM replied: The work of the committee is progressing, but I cannot say when the Departments will receive the committee's views on the two subjects mentioned by my hon. friend. The existing statistics relative to the mortality of seamen are available in the annual returns of shipping casualties to and deaths on vessels registered in the United Kingdom and in Part II. of the Registrar-General's decennial supplement dealing with occupational mortality. What the committee has in hand is a detailed investigation into the question of how far and in what way those statistics can be improved. The only satisfactory method of conducting such an inquiry is in connexion with current cases, and the committee are inquiring into the deaths reported month by month from October last probably until September next. No report can therefore be expected for some months. Work on the hygiene of crew spaces on board ship is well advanced, and discussions with those concerned are proceeding.

Silicosis Order and Scottish Quarries.

Mr. DUNCAN MILLAR asked the Home Secretary what arrangements had been made to exclude Scottish quarry owners operating quarries where silicosis was unknown from the provisions of the Silicosis Order.—Mr. SHORT (Under Secretary to the Home Office) replied: Certain representations have been received but my right hon. friend is not satisfied on the evidence at present before him that there is any sandstone quarry to which the scheme applies, whether in Scotland or elsewhere, in which there is no risk of silicosis. The medical inquiry into silicosis among sandstone workers, which was arranged for by the Home Office and Mines Department in 1928, and which extended to Scotland, disclosed cases of silicosis in every area in which examinations were made and showed that quarrying was among the dangerous occupations. Fuller information will be obtained from the medical examinations which are now being made at the quarries by the medical board set up under the scheme, and my right hon. friend's intention is, when these are completed, to review the position. I may add that the sandstones at the Scottish, as at other quarries, are highly siliceous, and do not, I am advised, differ geologically from sandstones worked in other parts of the country.

Obituary.

JOHN DIXON, M.D. ST. AND., M.R.C.S. ENG., L.M.

WE regret to announce the death of Dr. John Dixon, which occurred on Monday last, March 31st, in his 98th year, at his residence in Jamaica-road, Bermondsey.

John Dixon was the son of a Yorkshire farmer, and entered Guy's Hospital in 1851 as a medical student. He graduated at the University of St. Andrews three years later, and in the same year took the M.R.C.S. Eng. He also obtained the old diploma of L.M. from the College, a qualification which has not been taken since 1873, and of which there are only some 30 holders now living—an interesting point in connexion with the fact that the Conjoint English Board are now issuing regulations for a new diploma in gynæcology and obstetrics. In 1861 Dixon became L.R.C.P. Lond., and after holding certain temporary appointments, settled down to practice in Bermondsey where he lived for 70 years. He was from the beginning of his professional life an active practitioner, taking the keenest interest in public health. He was for 40 years surgeon to the Surrey Dispensary, for a long period poor-law medical officer and public vaccinator, and for a quarter of a century medical officer of health for Bermondsey, and certifying factory surgeon. In all these capacities he earned the respect and, as years went on leaving his energies unabated, the admiration of the whole community which he served, and when in 1901 he was appointed a magistrate of the County of London, the honour was felt to have been fully earned.

For some time John Dixon must have been the senior member of every association to which he was attached. The oldest Guy's student, the oldest M.R.C.S., the oldest L.R.C.P., he was also the oldest Freemason in the country, and in the course of his career as a Mason, which commenced in 1856, he held every office and obtained every distinction which the Order affords. He was a remarkable example of one for whom old age had no terrors, and to whom it brought no disabilities. The child of parents neither of whom died until the age of 90 had been reached, his own statement was that he had practically never been ill in his life, while his freedom from illness could not be attributed to any strict rules of living, regulations of diet or restrictions of any sort, save those dictated by common sense and his medical experience. At the last dinner of the Fellows and Members of the Royal College of Surgeons of England, those seated near him were amazed to see that he dealt with the fare offered as easily as they did themselves and that he was perfectly aware of what was taking place around him, while he concluded the evening by smoking two large cigars. To all who expressed surprise at his vigour he always replied that it was due to the salubrious air of Bermondsey.

WILLIAM HOWARD NICHOLLS, M.R.C.S. ENG., L.S.A.

Dr. W. H. Nicholls, who died at his residence in Brighton on March 23rd, was in his day one of the best-known practitioners in the town. He was born in London 85 years ago, but commenced his medical studies at the Royal Sussex County Hospital, Brighton. In 1865 he entered the Guy's Hospital Medical School, where he was a prizeman, and whence he qualified in 1868 as M.R.C.S. Eng., and L.S.A. During the succeeding four or five years he resided at the Royal Sussex County Hospital as house surgeon, and in 1872 he entered into private practice in Brighton. He steadily won his way to a prominent place among his colleagues, and in 1889 was president of the Sussex Medico-Chirurgical Society. He was honorary surgeon to the Deaf and Dumb Institute and the Brighton and Hove Provident Dispensary, and at one time district medical officer to the Brighton Dispensary. Dr. Nicholls, who retired from practice nearly 30 years ago, married in 1872 Annette, daughter of the late Mr. Thomas Gates, of Shoreham, and this lady and two daughters survive him.

HENRY FAULDS, L.R.F.P.S. GLASG.

WE regret to announce the death, which occurred on March 19th last, of Dr. Henry Faulds, whose name is so well known in connexion with dactylography.

Henry Faulds, who was born in 1844, received his medical education at Anderson College, Glasgow, and was for a period a resident officer at the Royal Infirmary, Glasgow. For a time he pursued his studies at St. Thomas's Hospital, but while still a young man went to India and practised there as a civilian doctor. Later he took the appointment of surgeon-superintendent at the Tsukiji Hospital, Tokio, and for a long time was active in Japan in the cause of sanitary science. It is now 50 years since he issued a schedule containing outlines of the ten fingers to be filled in with imprints from the palmar pads of each last joint in the serial order of the fingers, and has a good claim, founded upon this work, to be regarded as the inventor of finger-print investigation. The forms, in outline, were done on copper plate in Japan while he was in charge of the Tsukiji Hospital, and were circulated freely to explorers, missionaries, ship surgeons, coroners, magistrates, judges, and chief constables. Dr. Faulds's idea was to lay the foundation of a scientific system of personal identification—he intended the records

to include soldiers and sailors, in view of the possibility of sudden death and burial without identification, to help in the recovery of lost children, to secure recognition of unknown dead bodies and of persons who had lost knowledge of their personality by illness. In 1905, Dr. Faulds published a Guide to Finger-Print Investigation, in which he emphasised his feeling that evidence of this kind can only be kept free from fallacy if submitted to the scientific expert, and the institution of finger-print collections in connexion with criminal investigation departments shows how exactly this feeling is shared to-day by highly organised communities.

Medical News.

UNIVERSITY OF LEEDS.—At recent examinations the following candidates were approved:—

M.D.

H. G. Garland (with distinction); R. Marinkovitch, and J. M. Robson.

CH.M.

L. N. Pyrah.

B.Sc.

Class II.—W. H. Tod and N. Wood (with honours in Physiology).

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—J. E. Abell, P. R. Allison, E. L. Brittain, J. M. P. Clark, J. L. Coleman, J. Fielding, J. J. Fry, R. A. Hall, G. P. Holderness, J. M. Holmes, G. Hyman, A. G. James, E. A. James, G. Marquis, H. Mattison, B. S. Platt, M. R. Potter, S. Rosenbloom, M. G. Ross, N. Ross, J. Scholefield, B. Schroeder, P. Science, C. K. Shain, J. Shapiro, J. Shernovitch, and F. Staub.

Part II. (*Old regulations*).—G. Hirst and Eugenie C. Illingworth.

Part III. (*Old regulations*).—W. H. Craven, Eugenie C. Illingworth, S. Rosenberg, L. Seaton, W. E. Smart (second-class honours), and S. Thompson.

Parts II. and III (*New regulations*).—Bessie Brown (second-class honours), W. R. Everatt, J. F. Galpine, and R. G. S. Meadley.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PYHSICIANS AND SURGEONS OF GLASGOW.—The following candidates for the triple qualification have been approved:—

A. A. Hamilton, Shyam Sundar Misra, C. W. Clayson, Hari Chand Mehta, W. A. McE. Stewart, J. L. Chisholm, and D. A. Fraser.

DIPLOMA IN PUBLIC HEALTH.

Part I.—G. H. H. Maxwell, W. D. Bertram, E. L. Godfrey, R. H. Dawson, Margaret B. MacLaren, Dorothy D. W. Brander, Anna M. M. Kerr, Thaliakattu Parukutti Ammal, Winnifred N. Henderson, Jessie, E. M. Munro, J. A. Burgess, and A. D. Gorman.

UNIVERSITY OF ABERDEEN.—At a Graduation Ceremony, held on March 26th, the following degrees were conferred:—

M.D.—*John Charles Kerrin, †Thomas Edge Anderson, †George Carmichael Kelly (*in absentia*); ‡Robert Gordon Spink (*in absentia*), Harry Emslie Smith.

* Awarded highest honours for thesis. † Awarded honours for thesis. ‡Awarded commendation for thesis.

M.B. and Ch.B.—*Edwin James Reid Leiper (with first-class honours); *William Ian Andrew Fell, *John Gerrie, and Howard Bruce Wilson (with second-class honours). Ordinary Degree: Robert Mackay Barron, Edward Farquharson, Herbert Fowlie, William Frederick Gapper, Herbert John Green, Marshall William Keith, John Grant Lindsay, Ronald Maclean, Duncan Campbell Robb, John Marshall Ross, and George Alexander Sharp.

* Completed Final Medical Professional Examination with distinction.

UNIVERSITY OF DURHAM.—At recent examinations the following candidates were successful in the undermentioned subjects:—

LICENCE IN DENTAL SURGERY: THIRD EXAMINATION.

Pathology and Bacteriology, Practical Dental Mechanics, Dental Materia Medica and Therapeutics.—J. A. Atkinson, and T. A. Ireland.

THIRD EXAMINATION FOR M.B., B.S.

Pathology and Bacteriology, Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence.—*A. de W. Ranken, *H. K. Vernon, *J. I. M. Black, *C. F. Down, *A. R. Holtby, and *W. P. Dunn. Pass-list: H. Bannerman, T. H. Boon, Gladys M. Brice, J. L. Burn, R. D. Burn, G. S. Clark-Maxwell, J. A. Forrest, J. W. Gibson, John Giles, T. R. Harlan, H. F. Harvey, N. V. Hepple, J. R. Hindmarsh, T. M. John, A. D. Kelly, J. J. H. Lowe, Elizabeth S. Malcolm, J. A. McKeon, J. C. Moor, E. W. Peet, Prem Nath Rampal, J. D. Rose, L. R. Routledge, Kathleen Rowstron, J. K. Stanger, F. H. Taylor, with second-class honours.

UNIVERSITY OF LONDON.—The University College Committee have re-elected Viscount Chelmsford as chairman, and Sir John Rose Bradford as vice-chairman for the year 1930-31.

NAVAL MEDICAL COMPASSIONATE FUND.—A meeting of the subscribers of this Fund will be held at 3.30 P.M. on April 24th at the Medical Department of the Navy, Queen Anne's Chambers, Tothill-street, Westminster, London, S.W., to elect six directors of the Fund.

HARVEIAN SOCIETY.—A meeting will be held at the Paddington Town Hall on Thursday, April 10th, at 8.30 P.M., when a discussion on High Blood Pressure will be opened by Sir Thomas Horder, followed by Dr. Batty Shaw and others.

ROYAL NORTHERN GROUP OF HOSPITALS.—A post-graduate course will be held at the Royal Northern Hospital, Holloway-road, N., and the Royal Chest Hospital, City-road, from April 7th to 11th. Particulars will be found in our Medical Diary.

DIPLOMA IN PUBLIC HEALTH.—A three months' course of lectures and demonstrations on clinical practice and hospital administration will be given at the North-Eastern Hospital, St. Ann's-road, Tottenham, London, N. 15, by Dr. F. H. Thomson, on Mondays and Wednesdays at 4.45 P.M., and on alternate Saturdays at 11 A.M., beginning on Wednesday, April 9th.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on April 11th, in the Town Hall, Chatham, when a discussion on the Administrative Control of Infectious Disease will be opened by Dr. W. A. Muir. Discussions will also take place on Modern Elementary School Construction, and on Special Difficulties in Housing. On April 12th visits will be paid to the Rochester and Chatham Joint Sewage Works; The Royal Naval Hospital; and to a Certified Milk Farm and Pasteurisation Plant.

ELIZABETH GARRETT ANDERSON HOSPITAL.—Twenty pay-beds are being installed at a cost of £20,000. The hospital has grown from 20 beds in 1882 to 105 beds, and patients have multiplied seven and a half times in that period. Sir Alan Anderson last week unveiled a window in the Pollock Ward in tribute to the 40 years' work of Mrs. Gordon Pollock, who recently resigned the chairmanship.

KING'S COLLEGE HOSPITAL.—In 1929 the number of patients was the highest since the end of the war, constituting the largest daily average of civilian patients in the history of the hospital. The daily average, excluding babies born in the maternity ward, was 329; the total number of in-patients just exceeded 7000, an increase of 746 over the preceding year. The new asthma clinic is being well attended.

LIVERPOOL POST-GRADUATE COURSE IN CARDIOLOGY.—A special two weeks course in cardiology will be held at the Liverpool and District Hospital for Diseases of the Heart, Oxford-street, Liverpool, from April 29th to May 12th. Lectures and demonstrations will be given between 3.30 and 5.30 P.M. in the afternoons by Dr. I. Harris, Dr. Newman, Mr. P. W. Leathart, Dr. I. J. Lipkin, Dr. C. Rankin, and Dr. F. S. Hawks. On April 29th and 30th, at 4.30 P.M., Prof. J. M. Beattie will lecture on the Bacteriology of Rheumatic Infections and on Vaccines and Antitoxins at the University School of Hygiene, Oxford-street. The clinics at the hospital will be open to those taking part in the course, who will not exceed 20. Early application should be made to the secretary at the hospital.

POST-GRADUATE COURSE IN INFANTS' DISEASES.—A special course in infants' diseases for medical officers of welfare centres and others will be given at the Infants Hospital, Vincent-square, Westminster, from April 28th to May 11th, under the auspices of the Fellowship of Medicine. Lectures and demonstrations will be given every afternoon by Dr. W. E. Robinson, Dr. Vincent Denne, Dr. Eric Pritchard, Dr. Jean Smith, Dr. N. O. Richards, Dr. A. Maitland Jones, Dr. C. C. Okell, Dr. Muriel Radford, Mr. Tyrrell Gray, Dr. B. Shires, Mr. Philip Franklin, and Mr. David Levi. On Saturday visits will be paid to United Dairies Pasteurising Plant, Willesden, and the Nursery Training School, Welgarth-road, Hampstead, and on Sunday to the V.D. Centre for Prophylactic Treatment of Syphilis in Infants at Thavies Inn, Holborn. The number of practitioners attending the course is limited to 15. Applications should be sent to the secretary of the Fellowship at No. 1, Wimpole-street, London, W. 1.

THE TEACHING OF RADIUM THERAPY.

THE MOUNT VERNON AND RADIUM INSTITUTE.

THE Radium Commission announces that facilities for post-graduate teaching in radium therapy will be provided at the Radium Institute and the Mount Vernon Hospital (Northwood), which institutions are being reorganised as a joint teaching centre, styled the "Mount Vernon and Radium Institute," under a single control so far as medical services, teaching, and research are concerned. In all other respects the two institutions will retain their separate identities.

Allocation of Radium.—So far 17 grammes (out of a possible total of about 22) have been ordered and provisionally allocated by the Commission. Nine grammes have already been received from the manufacturers, and 6½ of these have been delivered to centres in England, Scotland, and Wales.

National Radium Centres.—In accordance with the policy of concentrating national radium at a limited number of centres with medical schools attached, 12 "national radium centres" have been nominated. Of these, Birmingham, Cardiff, Edinburgh, and Aberdeen have already been supplied with radium; Manchester, Glasgow, and Newcastle will receive a supply almost immediately; while the agreements with Bristol, Dundee, Leeds, Liverpool, and Sheffield have yet to be signed. Plants for the preparation of radon (radium emanation) are being set up in some centres. In London two centres are being organised to carry out special work: (1) the Mount Vernon and Radium Institute, mentioned above; and (2) the Westminster Hospital, which is experimenting with a "bomb" (containing 4 g.) in order to determine the value of mass irradiation and long distance radium therapy.

Radium National Forms.—A set of "radium national forms" for the use of recognised centres have been prepared in order that the clinical records of all cases treated may be kept on a uniform basis and eventually incorporated in general national statistics. It is hoped that these may eventually be adopted by other institutions practising radium therapy. Specimen copies may be obtained on application to the Secretary of the Commission at 5, Adelphi-terrace, London, W.C. 2.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, April 8th.—8.30 P.M., PSYCHIATRY. Dr. Edward Mapother and Dr. A. A. W. Petrie: Impressions of American Psychiatry.
THURSDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.) 8.30 P.M., NEUROLOGY. (Cases at 7.45 P.M.) Clinical Meeting at the Hospital for the Paralysed and Epileptic, Maida Vale, London, W.
FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Cases. Mr. Harold Edwards: Abnormal Ossification of the Patella with Symptoms? due to Osteochondritis. Spontaneous Rupture of the Biceps Humeri in a Tabetic Patient. Mr. A. E. Mortimer Woolf: Fracture of the Humerus with Intra-articular Dislocation—Operation, Replacement. Mr. Paul Bernard Roth: Double Coxa Vara. Dr. H. V. Morlock: Case of Hæmochromatosis. Mr. Cecil P. G. Wakeley: Painful Traumatic Osteo-arthritis. Case of Eighth Nerve Tumour after Operation. Case of Lymphadenoma. Dr. M. A. Blandy: Case of Leontiasis Ossea. Other cases will be shown. 8 P.M., ELECTRO-THERAPEUTICS. Dr. H. A. Bulman, Dr. L. H. Clark, Dr. S. Russ, and Dr. Samson Wright: The Physiological Effects of Penetrating X Rays upon the Cat and Rabbit. A discussion will follow.

MEDICAL SOCIETY FOR THE STUDY OF INDIVIDUAL PSYCHOLOGY, 55, Gower-street, London, W.C.
THURSDAY, April 10th.—8.30 P.M., Dr. Crookshank: Illustrations of I.P. from the Penny Papers.

HARVEIAN SOCIETY, Paddington Town Hall, W.
THURSDAY, April 10th.—8.30 P.M., Discussion on High Blood Pressure, to be opened by Sir Thomas Horder, followed by Dr. Batty Shaw, and others.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, W.C.
FRIDAY, April 11th.—5 P.M., Dr. W. M. Ash, Dr. Reginald Worth and Dr. W. A. Potts: Mental Deficiency and Lunacy in Relation to Public Health.

CHILD-STUDY SOCIETY, 90, Buckingham Palace-road, S.W.
THURSDAY, April 10th.—6 P.M., Dr. R. H. Crowley: Parent Education, the Home and the School.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, April 7th, to SATURDAY, April 12th.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special post-graduate course in Medicine, Surgery, and Gynæcology. Operations and lecture-demonstrations in the Wards and Out-patient Departments.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W.1. Special post-graduate course of lectures and clinical demonstrations. Daily at 5 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, April 7th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose, and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases. Clinics. Operations.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
MONDAY, April 7th.—2.15 P.M., Mr. L. E. Barrington-Ward: Demonstration of Surgical Cases. 3.15 P.M., Mr. C. Lane Roberts: Difficult Forceps Cases.
TUESDAY.—2.15 P.M., Mr. Kenneth Walker: Coliform Infection of the Urinary Tract. 3.15 P.M., Teaching in the Wards.
WEDNESDAY.—2.15 P.M., Dr. Bernard Schlesinger: Demonstration of Cases in the Children's Depts. 3.15 P.M., Dr. H. C. Semon: Clinical Demonstrations.
THURSDAY.—2.15 P.M., Dr. E. G. B. Calvert: Abdominal Pain. 3.15 P.M., Mr. J. B. Hunter: Tumours of the Breast.
FRIDAY.—2.15 P.M., Dr. Bruce Williamson: Medical Ward Visits. 3.15 P.M., Teaching in the Wards.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Keppel-street, W.C.
TUESDAY, April 8th.—4 P.M., Sir Andrew Balfour will give an address describing Prof. W. H. Welch's life and work in celebration of his eightieth birthday. Admission free.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL.
FRIDAY, April 11th.—4 P.M., Mr. W. A. Mill: Earache in the Normal Ear.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square.
WEDNESDAY, April 9th.—6 P.M., Mr. F. Talbot: Trigeminal Neuralgia as it Occurs in the Electro-therapeutic Department.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
TUESDAY, April 8th.—5 P.M., Mr. W. McKim McCullagh: The Treatment of Obstructed Labour.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, April 8th.—4.15 P.M., Mr. E. W. Telford: Fractures of the Ankle-joint.
FRIDAY.—4.15 P.M., Mr. W. H. Hey: Demonstration of Surgical Cases.

ANCOATS HOSPITAL, Mill-street, Manchester.
The Lecture on Affections of the Kidney, postponed from April 3rd to April 10th, will not be given until a later date. There will not be a lecture on April 10th.

ANCOATS HOSPITAL POST-GRADUATE COURSE, Mill-street, Manchester.
THURSDAY, April 10th.—4.15 P.M., Mr. Harry Platt: Injuries of the Spine.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, April 9th.—4.15 P.M. (at the Ophthalmic Institution), Dr. H. Wright Thomson: Eye Cases.

Appointments.

ADAMSON, A. F., M.B., Ch.B. Edin., D.P.H., has been appointed Medical Officer of Health and School Medical Officer for Hendon.

AHERN, J. M., M.B., B.Ch.R.U.I., Medical Officer at Parkhurst, Isle of Wight.

CLARKE, JOSEPHINE, M.B., B.Ch.N.U.I., Medical Officer for Arranmore Dispensary District.

COX, GLADYS M., M.B., B.S. Lond., Medical Officer for Clinics at Armada-street Centre, Greenwich.

CRAWFORD, MABEL, M.D., B.Ch. Dub., Hon. Asst. Surg., Liverpool Maternity Hospital.

FARRELL, MARY, M.B. Ch.B. N.U.I., Medical Officer for Longford.

KREMER, M., L.R.C.P. Lond., M.R.C.S., House Physician, Middlesex Hospital.

LOGAN, F. C., M.B., Ch.B. Glasg., Medical Superintendent of the Gloucester County and City Mental Hospitals.

MORLEY, J., M.B., Ch.M. Manch., F.R.C.S. Eng., Lecturer in Systematic Surgery in the University of Liverpool.

SIMPSON, G. S., F.R.C.S. Eng., Professor of Surgery in the University of Sheffield.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Hospital for Sick Children.—Two H.P.'s. and two H.S.'s.
Aden Settlement, Arabia.—M.O.H. 800Rs. per mensem.
Barnsley, Beckett Hospital.—Cas. O. £250.
Barrow-in-Furness, North Lonsdale Hospital.—H.S. £175.
Bath, Royal United Hospital.—H.S. Asst. H.S. At rate of £150 and £100 respectively. Also H.P. £120.
Bedford County Hospital.—H.S. At rate of £175.
Beit Memorial Fellowship for Medical Research.—Jun. Fellows. £400.
Birmingham, Queen's Hospital.—Two H.P.'s. Res. Anæsthetist. Also Cas. H.S. All at rate of £70.
Blackburn Royal Infirmary.—Fourth H.S. £150-£200. H.S. At rate of £100.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.
Bristol Royal Infirmary.—H.P. At rate of £60.
Burnley, Victoria Hospital.—H.P. At rate of £150.
Burton-on-Trent General Infirmary.—H.S. £150.
Cambridge, Addenbrooke's Hospital.—H.P. and H.S. Each at rate of £130.
Connaught Hospital, Orford-road, E.—Sen. Res. H.S. At rate of £150. Also Jun. Res. H.S. At rate of £100.
Derby, Derbyshire, Royal Infirmary.—H.P. £150.
Doncaster Royal Infirmary.—Hon. Phys. and Path. Hon. Ear, Nose and Throat S. Also Two Hon. Anæsthetists.
Downpatrick, Down Mental Hospital.—Jun. Asst. M.O. £300.
Dundee Royal Infirmary.—Two Asst. Visiting M.O.'s
Durham County Council.—Asst. M.O. for Public Services. £800.
Durham County Hospital.—Jun. H.S. £120.
East Ham Memorial Hospital, Shrewsbury-road, E.—H.P. and Cas. O. At rate of £150.
Edinburgh Corporation.—M.O.H. £1500.
Evelina Hosp. for Children, Southwark, S.E.—H.S. At rate of £150.
Folkestone Borough.—Asst. M.O.H. £600.
Halifax Royal Infirmary.—First H.S. also Third H.S. At rate of £175 and £100 respectively.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50 for six months. Jun. H.P. At rate of £100.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.
Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.
Hove, Lady Chichester Hospital.—Jun. H.P. £50.
Huddersfield County Borough.—Asst. M.O.H. £500.
Inverness, Northern Infirmary.—H.P. £100.
Indian Medical Service.—Commissions.
Kenya Colony.—Medical Officer.
King Edward Memorial Hospital, Ealing, W.—Sen. and Jun. H.S.'s. At rate of £150 and £100 respectively.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool, St. Paul's Eye Hospital.—H.S. At rate of £120.
London Homœopathic Hospital, Great Ormond-street, and Queen-square, Bloomsbury, W.C.—Res. M.O. £100.
London Jewish Hospital, Stepney Green, E.—Med. Reg. and Out-patient Asst. At rate of £150.
Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S. At rate of £150.
Medical Inspectors of Factories.—£600.
Metropolitan Hospital, Kingsland-road, E.—Sen. H.P., Sen. H.S., Jun. H.P., Jun. H.S. Also Two Cas. O.'s. All at rate of £100.
Montrose Royal Asylum.—Asst. M.O. £225.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. Also Res. Sen. H.S. At rate of £100 and £95 respectively.
Nottingham General Hospital.—Second Cas. O. At rate of £150.
Preston and County of Lancaster Royal Infirmary.—Pathologist. £1000.
Princess Louise Kensington Hospital for Children, North Kensington.—H.P. At rate of £75.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. Anæsthetist. At rate of £80.
Queen's Hospital for Children, Hackney-road, E.—H.S At rate of £100.
Royal Eye Hospital, St. George's Circus, Southwark, S.E.—H.S. Also Asst. H.S. At rate of £150 and £100 respectively.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. At rate of £150. Also Res. Anæsthetist.
Royal Northern Hospital, Holloway-road, N.—Pathologist. £750. Also Asst. Pathologist. £500.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. At rate of £100.
St. Bartholomew's Hospital, E.C.—Chief Asst. to Dental Dept., also Dental H.S. At rate of £80.
St. Helen's Hospital, Lancashire.—Res. M.O. £250.
St. John's Hosp., Lewisham, S.E.—Res. Cas. O. At rate of £100.
Salford Royal Hospital.—H.P. also Cas. H.S. Each at a rate of £125.
Samaritan Free Hospital for Women, Marylebone-road, N.—H.S. At rate of £100.
Southampton, Royal South Hants and Southampton Hospital.—Cas. O. At rate of £130-£160.
Stafford County Mental Hospital.—2nd Asst. M.O. £600.
Stockport Infirmary.—H.P. £175.
Tiverton Hospital.—H.S. At rate of £100.
Wakefield, Clayton Hospital.—Two H.S.'s. Each at rate of £150.
Walsall General Hospital.—Cas. H.S. At rate of £150.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. H.S. Also Jun. H.S. At rate of £150 and £100 respectively.
Winchester, Royal Hampshire County Hospital.—Hon. Anæsthetist.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Soham (Cambridgeshire).

Notes, Comments, and Abstracts.

SOME PSYCHOLOGICAL OBSERVATIONS ON ADULT MALE TUBERCULOUS PATIENTS.

By H. Banister, M.Sc., Ph.D. Camb.,

LECTURER IN EXPERIMENTAL PSYCHOLOGY, UNIVERSITY OF CAMBRIDGE; AND HON. PSYCHOLOGIST, PAPWORTH VILLAGE SETTLEMENT.

For the understanding of the mental outlook of patients suffering from tuberculosis it is necessary that the salient facts of the disease itself should be known.

Underlying Pathology of the Disease.

Tuberculosis, which is essentially a disease of civilisation appears in two main forms. The forms are not mutually exclusive, but merge into each other. The first type is an acute generalised tuberculosis in which the lungs are affected as a part of the general infection. This is the most severe type, and is the form the disease generally takes when introduced into uncivilised lands. It is the form most prevalent in infancy, and is responsible for about one out of every three infantile deaths. If an infant which has been infected survives, the result is a certain amount of immunity; so that, between infancy and puberty, children are particularly free from tuberculosis. But at puberty there is a sudden increase in the death-rate. The disease is now of the second type, which consists most commonly of chronic pulmonary lesion, often without any tuberculosis anywhere else. The death-rate falls gradually as the sex life wanes. As a rule, proneness to the disease begins earlier and subsides earlier in women than in men. These facts may possibly be of significance.

One other point, and a most important one for us, is that, in general, the disease is painless. There is actual destruction of the tissue—e.g., of the lung—and a general toxæmia: but except in special cases—e.g., in pleurisy—there is no pain and little active discomfort. The patient feels disinclined to exert himself, and may complain of a general slackness. Otherwise there is little to indicate to him the seriousness of the malady with which he is attacked. From the nature of the disease it is obviously very difficult—at present it is impossible—to effect a "cure." The utmost that can be done is to arrest the progress of the disease; but the loss of tissue remains and the infection is always there and may at any time break out anew. As R. C. Wingfield [1] says, "No patient can be said to be cured till he is safely dead of some other disease." As an example of this I may give the case of a patient at Papworth. The disease was arrested, and he was working, was well, and was happy. He was also very keen on the stage, and was very anxious to see Mrs. Patrick Campbell in "Magda." Contrary to medical advice he went, was very thrilled by the play, and . . . died within the week.

Mental Consequences.

So much for the pathology of the disease. What of the mental consequences? These are many and widespread, though whether there is any definite insanity which is to be connected with tuberculosis is open to doubt. S. A. Knopf [2] considers that there is no definite pathological outlook which is connected with tuberculosis. D. G. M. Munro,[3] on the other hand, considers that there is a phthisical insanity—an example of an exaggeration of ego-centricity—and that the symptoms may be regarded "as generally falling within two main groups: (*a*) mania of a mild delusional kind, and (*b*) melancholia." T. S. Clouston [4] also points out that the death-rate from pulmonary tuberculosis in the Royal Edinburgh Asylum, during the decade 1879–88, was higher than that in the general population as 3:1, and suggests that the reason why so few cases of insanity occur in sanatoria is that the mental symptoms declare themselves first. The connexion between dementia præcox and tuberculosis is commented on by Dr. Pollock, of the Department of Mental Hygiene, New York, in a private letter to me as follows: "The question of the relation of dementia præcox to tuberculosis has been raised on account of the high rates of death of dementia præcox patients from tuberculosis. It seems probable, however, that such high

[1] Text-book of Pulmonary Tuberculosis, p. 4.
[2] Military Surgeon, vol. lvi., 1925 (quoted from Munro, The Psychopathology of Tuberculosis).
[3] Psychopathology of Tuberculosis, pp. 25–31.
[4] Dictionary of Psychological Medicine, vol. ii., p. 939.

death-rates are due to the habits of the dementia præcox patients and not to any close relationship of the physical to the mental disorder." From my own very slight experience, I am inclined to the view expressed by Dr. Pollock—viz., that the tuberculosis is a consequence of, and not a cause of the insanity.

Yet the average sufferer from tuberculosis is far from normal. This, I think, must be ascribed to many factors, of which the toxæmia may be one, in that it entails a general lowering of vitality, thus decreasing the resistance which the patient can offer to any disturbing influence. He is, in consequence, much less able to solve his problems and is, therefore, much more liable to a breakdown should any difficulty arise in his life. And with such difficulties the life of the victim of tuberculosis is fraught, and as a result we get many abnormal symptoms, which are not produced by the disease directly, but which are caused by the difficulty of living. In my opinion such mental symptoms may be expected to occur in any disease or illness which is painless and long, and which involves the individual in difficult problems.

As has already been indicated the disease has usually a long history before diagnosis, and hundreds, nay thousands, of apparently healthy people are in reality already far gone in tuberculosis. They are not, perhaps, the most advanced of them, feeling very fit. They have coughs and colds, but they will "be all right in a day or two," and so they carry on, sometimes better, and sometimes worse, putting off the evil day when they must call in the doctor. It is a strange fact that a medical examination should be regarded with such terror, unless one is really ill. Who, even the fittest of us, does not know the feeling of relief when our medical examination, say for an assurance policy, is over? And so the individual carries on, a little more weary, perhaps, a little more irritable with his people at home, and his friends possibly thinking him rather a slacker; or, if cast in another mould, he carries on in spite of his feeling of lassitude, priding himself on the fact that he so seldom misses a day's work. Then one day he is examined, either going of his own freewill, or being forced to call on the doctor owing to a hæmorrhage. Of these two cases, the latter is the easier one to treat. The patient and his family have had a rude shock. They are all thoroughly frightened. Something must be done and that quickly; so, though the effect of the hæmorrhage may be physically slight, treatment is undertaken at once, and there is hope. The one who has not had such an experience goes on hoping and perhaps persuading himself that the diagnosis is not correct. He is in consequence much less likely to follow out the treatment which is necessary.

Reaction when Diagnosis is Made.

The reaction of patients when the diagnosis is made is very variable. The patient may take it calmly, obviously realising the verdict and all its implications; or he may break down completely—a big, strong-looking fellow bursting into a flood of tears; or the serious statement may be received with indifference, the patient acting as though the diagnosis were of no account or at least as though he believed the doctor had made a mistake. These reactions are, I consider, valuable to the doctor, and should be carefully noted. They show the attitude the patient is adopting towards his illness, and this attitude is important for his future welfare. The one who faces the facts calmly with full realisation is already beginning the struggle bravely, a great factor in his favour; the one who breaks down may be comforted, and after the first shock may also put up a brave fight; but the third has already decided to throw in his hand. He dare not face the situation, and will do all manner of foolhardy things to prove that the diagnosis is incorrect, often with disastrous results. Such an one requires careful attention. It is not sufficient to send him away from the consulting-room muttering under one's breath that one can do nothing for fools. One can do nothing with fools, but one can endeavour to prevent them from being fools. Half an hour spent by the doctor at such a time will save many a weary hour later.

It is hard for us who are fit and well to realise what a blow the diagnosis of tuberculosis may be. A man, often with a wife and family and a comfortable home, with a business which is secure and which is steadily growing, and with a future which seems so assured—a man to whom the world appears a lovely place with its bright spots far outnumbering the few clouds which serve but as a contrast to what is so pleasant—such an one is told he has tuberculosis. Gone is his future; no more can he compete in his business; the holiday he had so joyously planned may not be; his children's education must now be modified; the house must be sold; his wife must go out and work. Not only is he himself no longer a breadwinner, he is instead bound to be a heavy and constant expense through the long and wearisome illness, which can end in but one way. It is a brave man who can face such a situation unafraid. But the state is even worse than this, for the man is no longer able to mix freely with his fellow men. His friends are chary of asking him to their houses for fear lest he should infect them or their children; if he coughs all eyes turn in his direction. He is now an outcast. This is a terrible experience, and the patient plumbs the depths. Is it surprising that he gives way to despair?

Result of Individual Sentiment.

The best patients are those who will face the facts; but most, even of them, go through a period of great depression, and are very liable to break down. The most satisfactory patients are often, in my opinion, the married. This may seem strange, for they have others dependent on them and their worries accordingly, one would think, must be greater than the worries of those who are not "hampered" with a wife and family. This is quite true in one sense; but there is another factor, which is that the married man often has a strong sentiment organised round his family, and for their sakes he "will" get well. The unmarried man, all too often, has as his chief sentiment a peculiarly self-centred one. He is ambitious; he would have been such a good boxer or footballer, or something of that kind. He now has nothing to live for. What is the use? He can no longer go about and have a good time again, and—down he goes. Here, I think, we touch on a very vital problem in the study of tuberculosis. It is the organisation of the individual's sentiments which is of prime importance—a man with his principal sentiments organised round some ideal, which is not ego-centric, is able to bear the disorganisation caused by the disease, and to reorganise his life as may be necessary; the other, whose chief sentiment is ambition, or other self-centred sentiment, loses morale at once. He tends to go off into day-dreams of what might have been, or of what may still be if he is only cured quickly. He rails against his misfortune. Why is it that he is so much more hardly dealt with than are others? He is for ever looking at his thermometer and watching his symptoms; the least little thing puts him back, and he becomes a valetudinarian, and rapidly acquires the sanatorium habit, going round from one sanatorium to the next, ever more depressed, and going steadily down with little respites at every new sanatorium. Such patients are very difficult to treat. They cannot reorganise their lives.

At the same time, the general lowering of vitality, the result largely of the toxæmia, exacerbates any weakness already present. The many conflicts, which every individual has to face, and with which the majority of normally healthy individuals can cope satisfactorily, are beyond their strength, and the patient worries and worries, and loses his sleep. Rest is one of the main planks in the treatment, but lying in bed doing nothing but worry is not resting. Rest, lying down doing nothing, is the one thing such a patient cannot do. He cannot rest. He is filled with a feverish restlessness which is so often apparent and which is so very harmful. He becomes peevish and irritable, and a great trial to his nurse. Wingfield [1] remarks over and over again on the importance of searching for these worries, which he says, "may seem trivial, but . . . are really all-important." This is true; but the secret of treatment is not in the prescription of pot. bromide. Such treatment is, in my opinion, fundamentally wrong, and would be perhaps as useful as giving a man bromide for a broken arm. Nor is the secret of treatment to be found in work, assuming the patient is physically fit to work, which so often is not the case, for it is not occupation which is wanted; the mind is already more than fully occupied with its worries. The value of work is not to be decried. Its value is enormous, when organised as it is at Papworth, for the simple reason that it is the solution of the majority of the worries, not because it gives the patient something to think about. The patient sees that he can still work and earn a decent living, though in a different manner perhaps than when he was well. But work is not sufficient in these cases. No! The difficulties and worries must first be gone into and straightened out if progress is to be made. There was one such at Papworth in October last. He came to Papworth after four years' treatment elsewhere, during almost the whole of which time he had been given bromides because he never slept on account of his worries. Three-quarters of an hour on two separate days solved his difficulties. He began immediately to sleep well, and has had no relapse since.

Neurosis and the Spes Phthisica.

Sometimes patients may develop serious neuroses. Their treatment, psychologically, must follow the usual lines, but it is always to be considered whether the patient's state physically is such as to warrant proceeding further with such treatment.

We now come to that extraordinary state of hopefulness into which so many patients fall before the end; a pathetic state in which the patient, with scarcely strength to move

[1] Loc. cit., p. 122.

and within a few hours of his death, will talk cheerfully of what he is going to do when he is better. This state, the so-called spes phthisica, has been often described. But it must on no account be confounded with the state of resolution and hope with which, as I have mentioned earlier, some patients, particularly those whose mental life is healthily organised, face their trouble. This latter attitude is one to be encouraged; but the hope of the spes phthisica is far different. It does not make for recovery. It is almost tantamount to saying the patient has given up the struggle, and is of bad prognostic significance. And yet it should not be discouraged, for it does help the patient through his last days.

As I see it, the spes phthisica is a dissociation, the final stage in a long struggle, the initial one being, perhaps, evidenced in the man who refuses to acknowledge the diagnosis. The diagnosis and all it entails is so terrible that the individual cannot face the fact. It is pushed away more or less completely, and more and more completely as the disease progresses more and more. A number of patients, when in the middle stage, have described the "peculiar experience" of feeling that it is not they who are lying ill. They realise that they really are on the bed, and yet it does not seem to be them. They can adopt quite an objective attitude towards the rise and fall in their temperature, and towards their night sweats. Such things do not worry them in the least! . . . These are all stages, to my mind, in the dissociation which is so remarkable in its final form. In this interpretation of the phenomena, which I believe to be correct, I differ entirely from all the authorities I know on tuberculosis; but these authorities are, as a rule, authorities on the physical side only of the disease.

Summary.

1. Tuberculosis is a painless and long drawn-out illness.
2. There do not appear to be any specific psychoses or psychoneuroses connected with tuberculosis as a direct consequence of the disease. The abnormalities which arise, and they are many, are expressions of maladjustment such as may occur in any non-tuberculous individual.
3. The shock incident on diagnosis is great, and produces various anxieties and worries, not the least being the feeling that one is henceforth a pariah and an outcast.
4. The attitude the patient adopts towards his disease has a great effect on his progress. This attitude depends to no small extent on his sentiments, and on the way in which his sentiments are organised—the more ideal and the less self-centred the object of the sentiment the better.
5. Spes phthisica is a form of dissociation. In its initial stage it may be evidenced by a refusal to accept diagnosis; later the patient takes an objective view of his diseased body which seems to be something apart from himself; finally he is convinced he will soon be out and about again, the fact of his imminent death being absolutely dissociated. Prognosis in all these cases is probably bad.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

THE statutory annual general meeting of this Council was held on March 21st to receive the report for 1928–29. As the chairman, Sir Maurice Craig, remarked, the work has been steadily constructive rather than spectacular. Two successful series of lectures have been held and it is hoped that an educational series can be arranged for each spring and autumn. Although not strictly falling within the 12 months under review, reference was made to the remarkably successful conference held at the Central Hall, Westminster, last October (THE LANCET, 1929, ii., 998), and also to the international congress which is to be held in Washington next May. The full report of the London conference is now on sale (2*s.*) and a bulletin report of the Washington conference will be published as soon as possible. Propaganda work advances steadily; many drawing-room meetings have been addressed by members of the committee, and the Council hopes to organise a provincial campaign this summer. The subcommittee on the prevention and early treatment of mental disorders had done enough work to put it in a position to act promptly when the Mental Treatment Bill was rather unexpectedly introduced into the House of Commons this session. Many of the suggestions made by the committee have been incorporated in the Bill. This subcommittee has also circularised local authorities setting out the need for improved facilities for the treatment of poor persons suffering from minor mental disorders. The circular has been sympathetically received, and the Council propose to follow it up by sending an expert to discuss ways and means with the bodies and officials concerned. The subcommittee on the care, after-care, and treatment of the insane has done useful work in visiting observation wards of infirmaries; its report is expected to be very valuable in view of the changes in the poor-law. The subcommittee on mental disorders is investigating the problem of the sterilisation of the unfit, and is addressing letters to scientific bodies and public organisations asking for their views on the prevention of mental disorders and defects. Useful work is also being done on the children's courts, and a memorandum has been sent to the committee which is inquiring into the working of these courts. As the result of a successful dance organised last winter, the Council now has a respectable balance at the bank. Pioneer work of this kind, however, is always in need of larger funds and more adherents if its progress is not to be crippled. The system of associate membership with an annual subscription of only 5*s.* makes it possible for everyone to participate in this essential national work.

HOLOPHANE OPERATING TABLE LIGHTING.

THE makers of the ideal operating table lamp to which we called attention recently in an annotation (Dec. 28th, 1929, p. 1377) are Messrs. Holophane Limited (Scientific Illumination), of Elverton-street, Vincent-square, London, S.W. This unit was fully described at the December meeting of the Illuminating Engineering Society, and a full-size model of the unit, arranged with an operating table and other hospital accessories, is on view in the demonstration room of Messrs. Holophane Limited, where it may be inspected at any time.

APRIL CAMPAIGN AGAINST JUVENILE TUBERCLE.

THE National Tuberculosis Association is planning a campaign for the month of April throughout the United States of America on the subject of childhood tuberculosis. The purpose is to emphasise the importance of treatment in the period of latency. No treatment is to be offered through the Association, however. It will confine its efforts to education. In connexion with this a pamphlet of diagnostic aids has been prepared and will shortly be available through State and local associations. It is illustrated by coloured plates of the tuberculin reaction and with excellent aquatone reproductions of X ray plates. Emphasis is laid on the paucity of symptoms—that a child with active tuberculosis may be above weight and free from cough or fever. Physical signs may be lacking. "A rontgenogram is indispensable in the examination of a child's chest." Children with diffuse pulmonary infiltrations should not be subjected to tonsillectomy and in no case of childhood tuberculosis should competitive sport be allowed. There is great danger that excessive strain may reactivate dormant infection. Besides this booklet, evidently designed for the use of physicians, a number of brightly coloured posters have been designed. Advertisements will appear in magazines and newspapers. Motion pictures are available. All this is made possible by the sale of Christmas seals at one cent each.

Births, Marriages, and Deaths.

BIRTHS.

CARMICHAEL.—On March 29th, at East Heath-road, Hampstead, the wife of Dr. E. Arnold Carmichael, of a son.

MATSON.—On March 23rd, at Farnborough Park, the wife of R. C. Matson, M.R.C.S., L.R.C.P., of Woking, of a son.

MELVILLE.—On March 20th, at Teak-Penn, Stockingstone-road, Luton, the wife of Dr. H. R. Melville, of a son.

MARRIAGES.

FOX—MCDOUGALL.—On March 27th, at Christ Church, Wallington, Surrey, Theodore Fortescue Fox, M.A., B.Chir., son of Dr. and Mrs. R. Fortescue Fox, Beechshade, Beaconsfield, to Margaret Evelyn, elder daughter of Dr. and Mrs. W. Stewart McDougall, Benloyal, Wallington.

RAMAGE—MOLLER.—On March 25th, at St. Andrew's Church, Much Hadham, Herts, John Steven Ramage, M.B., Ch.B., F.R.C.S.E., to Mary Muriel Moller, M.B., B.S.

SIMPSON—NICOL.—On March 31st, at St. Giles-in-the-Fields, London, Dr. J. E. A. Simpson, of Southampton, to Dr. Janet C. Nicol, of Keith, Banffshire.

DEATHS.

DIXON.—On March 30th, at Jamaica-road, Bermondsey, John Dixon, M.D., J.P., aged 97.

HAYES.—On March 28th, at Ecclesfield, Clyde Longman Hayes, M.R.C.S., L.R.C.P. Edin.

HICHENS.—On March 29th, in a nursing home in London, Peverell Smythe Hichens, M.A., M.D., F.R.C.P., of Havelet House, Guernsey, aged 59.

MACKAY.—On March 30th, at a nursing home at Broughty Ferry, John Yule Mackay, M.D., LL.D., Principal of University College, Dundee.

WOODFORDE.—On March 31st, at Wolverton Mansions, Ealing Common, Alfred Pownall Woodforde, M.R.C.S., aged 78.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.